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STUDIES OF PATTERNS OF INFLUENCE IN THE SCHOOL SITUATION AS THEY AFFECT THE USE OF AUDIOVISUAL MATERIALS.

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THIS STUDY ATTEMPTED TO OBTAIN DATA WHICH WOULD HELP INSURE THE SUCCESS OF AN INFORMATION CAMPAIGN URGING MORE EXTENSIVE USE OF AUDIOVISUAL MATERIALS IN HIGH SCHOOLS. SEVERAL INTERDEPENDENT PHASES OF THE RESEARCH EFFORT ARE REPORTED. CHAPTER TWO REPORTS WHAT WAS DONE TO TRY TO DISCOVER EXISTING CHANNELS OF COMMUNICATION THAT CARRIED INFORMATION WHICH ENCOURAGED THE USE OF AUDIOVISUAL MATERIALS. IN CHAPTER THREE THERE IS A REPORT ON TEACHER ATTITUDES TOWARD AUDIOVISUAL DEVICES AND MATERIALS. CHAPTER FOUR DEALS WITH COGNITIVE DISSONANCE. CHAPTER FIVE DISCUSSES THE VALIDITY OF CERTAIN OF THE SOCIOMETRIC DATA GATHERED IN THE STUDY. CHAPTER SIX DEALS WITH THE QUESTION--TO WHAT DEGREE CAN THE FINDINGS CONCERNING FILM BE GENERALIZED TO APPLY TO OTHER AUDIOVISUAL DEVICES AND MATERIALS. THE RESULTS OF THE STUDY REVEAL (1) ATTITUDES TOWARD THE USE OF FILMS DO NOT RELATE TO AUDIOVISUAL AIDS IN GENERAL, AND (2) THE "SUBJECT TAUGHT" IS AN IMPORTANT VARIABLE. NEGATIVE OUTCOMES OF THE STUDY ASSISTED IN A RECONCEPTUALIZATION OF THE PROBLEM WHICH IS PRESENTED IN CHAPTER SEVEN. (JC)

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Studies of Patterns of Influence in the School Situation as They Affect the Use of Audiovisual Materials

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U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
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STUDIES OF PATTERNS OF INFLUENCE IN THE SCHOOL SITUATION AS THEY AFFECT THE USE OF AUDIOVISUAL MATERIALS

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July, 1963

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In Retrospect

In this study--which is correlational, not experimental, in character--a number of expected correlations that proved significant, came to be seen as having a different sort of relevance than was originally supposed to be the case. The results obtained were seen to coalesce in a way that made a good deal of sense, but in a way to suggest that the original conceptualization of the problem had been inadequate.

We came to believe that a demonstration of the "truth" of this point was a worthwhile goal of the present report. We have had a growing conviction that no outcome of this investigation held much interest when conceived within the initial conceptual framework that motivated this study at the start, but that a good deal that was of potential value to the progress of research in the audio-visual field was available in the reconceptualization suggested to us by our results.

In order to best present our view, therefore, we have occasionally allowed ourselves more freedom than otherwise would have been justified. Thus the reader will notice that at points the present report is relatively more "qualitative" and "logical" than it is "quantitative" and "empirical." To more quickly gain an impression of the character of this course of action, and the reasons for taking it, the reader should follow his reading of Chapter One, where the problem of the investigation is stated, with a reading of the concluding chapter, where we redefine the problem of the investigation.

In Acknowledgment

Donald Payne and Donald Larsen have been my most helpful associates, and they deserve much credit for what is valuable in this report. Don Larsen's greatly appreciated assistance was given in the planning stages of the study, while Don Payne assisted in the later stages. I am especially grateful to Don Payne for his always constructive, always thorough criticisms. His efforts have greatly enhanced the quality of this report. Harvey Black, too, deserves special thanks and special recognition as the project's number one interviewer. It was unfortunate, so far as the quality of this report is concerned, that he was a member of the research team for only a short period of time.

It is a most agreeable task for me to acknowledge the help of Ernest Hawes and Suchoon Mo as interviewers and research assistants; of Irwin Goodman and Robert Ruderman as interviewers; and of Diana Balio, Karen Barnett, Betty Beckort, and, especially, Shirley Stakowski, as clerical and typing assistants.

The greatest debt of gratitude, of course, is owed the many hundreds of teachers who gave us many hundreds of hours of their time. Heartfelt thanks are also due the administrators of the Indiana High Schools, where we spent many hours interviewing, and to the administrators of the National Science Foundation Summer Institutes in mathematics and science.

My very special thanks go to William Prigge, who greatly aided the research effort described in Chapter Five. I also wish to thank my colleagues in the Audio-Visual Center at Indiana University, most of whom were called upon for assistance more than once.

James Q. Knowlton

July, 1963

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CHAPTER ONE

INTRODUCTION

Among the interview questions that were asked as part of the present investigation, one question was designed to elicit teacher viewpoints as to the value of instructional television. Contrasting answers to this question were given by two teachers whose temperaments also contrasted; and their temperaments contrasted in such a way as to uniquely underscore their responses to this question.

The first teacher, who to the interviewer appeared rather cool and impersonal, said she did not think much of instructional television because it was "too impersonal." The second teacher, who appeared warm and friendly, said that the television teachers she had seen conveyed much warmth and friendliness.

The problem. As this anecdote suggests, reactions to the revolution in education precipitated by modern educational technology are very mixed. While it is demanded that researchers devote energy to developing instructional media we feel that, in addition, research designed to find ways of increasing the acceptance of the "older" or "more conventional" audiovisual media is also important. This will be seen as essential by all who understand that the audiovisual field can help educators who are today confronted with immense problems stemming from teacher shortages, increasing school enrollments, and pronouncements of generals and admirals dissatisfied with the present state of American education.

In the proposal requesting funds for the research reported here, we sketched the problem of this study. "Many teachers," we said, "even when the necessary facilities are readily available, use instructional film very infrequently or not at all. . . ." The reference was to film alone, and our original intention was thus to restrict ourselves. We broadened our concern to consider other audiovisual materials than film, but no change in fundamental orientation seemed called for at that time. The goal was to gain knowledge of the sort likely to enhance the success of an information campaign urging an increasing use of audiovisual resources.

Theoretical orientation. The orientation of this study was determined to an appreciable degree by communications research that dealt with the structure of small groups and with the way small groups function to exert pressures shaping the attitudes and actions of their memberships. This research was carried out, for the most part, after World War II. Previously, a major emphasis in mass communications research was one that regarded the "mass" as if it were wholly unarticulated, and thereby capable of being powerfully influenced by mass media messages in an undifferentiated way.

Following World War II a remarkable discovery was made: *viz.*, people. The influential work of Katz and Lazarsfeld, titled *Personal Influence* (1955), memorialized this discovery. The first chapter of the Katz and Lazarsfeld text is called "Between Media and Mass," and it contains a subsection titled "The Discovery of People." The central idea is that the mass media can exert a powerful influence on a large proportion of a population without directly reaching very many of those influenced. When this happens, it happens because the mass medium message reaches persons whose influence is disproportionately large. These "opinion leaders," as they came to be called, then carry the mass medium message to their friends and exhort them to take heed. They typically do this in an informal face-to-face situation.

A growing awareness of the frequency of mass communications failures, and even "boomerangs"--i.e., where the opposite of the intended effect occurs--has, in some minds, multiplied the significance of the discovery of the opinion leader's role as an individual mediator of mass media messages.

This was the broad context within which the present study was conceived and in which it was proposed that one step could be taken. The goal of this first step was to determine some of the factors to be reckoned with if the effective use of audiovisual materials was to be accelerated. Specifically, we attempted to determine the nature of one class of barriers--those of a social-psychological nature. We then attempted to employ these findings to aid in the design of an information campaign to help teachers and administrators overcome these barriers.

The respondents: normative sample. Two major categories of respondents were studied. One was normative, one non-normative. In the normative sample, the respondents were randomly chosen from among the participants in the 1959 National Science Foundation Summer Institutes for teachers of science and mathematics. These institutes, held at approximately 350 universities and colleges in the United States, had the objective of up-dating teachers in their chosen field of science. Of the 350 institutes, only those were included which were composed exclusively of high school teachers. Those institutes scheduled to terminate prior to or during the time the questionnaires would be mailed were also excluded. Fifty of the remaining 151 institutes were randomly selected for study. These institutes had approximately 30 to 40 participants, but a few ranged upward to near sixty. Fifty questionnaires were sent to each director of the 50 institutes chosen. Each director was requested to distribute these questionnaires to the teacher-participants, and later to return the completed questionnaires, under one cover, to the researchers.

One of the 50 institutes chosen had been cancelled, and another terminated before the questionnaires were received. Of the 48 remaining institutes, 42 (87 per cent) replied. A total of 1,458 completed questionnaires (an average of

35 per institute) was obtained, and these constitute the sample whose responses are here reported as the National Science Foundation (or NSF) sample.

Due to the cooperation of the institute directors, the percentage of replies was high. In addition, all states except Delaware were represented, and they were represented in approximate proportion to their population (r = .80). The respondents came from schools of widely-varying size (median = 600 students), representing 879 cities.

In an attempt to determine the extent to which the NSF results might be generalized, we tried to determine just how summer institute participants differed from their non-participating counterparts. The National Science Foundation had no data for answering this question with certainty. However, a communication from their program director revealed that enough stipends were awarded to give one out of every eight mathematics and science teachers in the United States' high schools an opportunity to participate. The Foundation's program director estimated that those who received these stipends represented a "somewhat better than average group." This supposition supported our own findings. We asked the directors of the institutes sampled to estimate the ability level of the participants in their institutes. Three-fourths of the directors reported that, in general, those teachers who were accepted were "better qualified" (i.e., had better academic records, recommendations, etc.), or were at least as well qualified, as those applicants who were rejected.

The sampling, it seems fair to say, was a sampling of young (modal age 34) high school science and mathematics teachers throughout the United States, who possessed general teaching ability and other qualities that their peers and administrative superiors considered to be generally above average.

The respondents: non-nominative group. The second group of respondents was comprised of the teachers of English, mathematics, science, and social studies who taught in six Indiana high schools. Eight high schools were studied, but the data from the first two schools investigated were used to provide information for modifying the questionnaire for later use. This first modification was not the last, but it was the only modification so extensive that the later findings were clearly non-comparable with the earlier findings. Hence, the data from six of the eight high schools are reported here.

The intention was to interview every teacher in the named departments, the interviews to be performed individually and privately. These aims were attained, except that scheduling difficulties prevented our achieving 100 per cent of the hoped-for interviews. No systematic bias that we are aware of resulted from this outcome.

In addition, teachers in other departments were interviewed when time permitted. Also, as many department heads were interviewed as was possible, regardless of department. Principals, AV building coordinators, district AV supervisors, half of the school superintendents, and two assistant superintendents were also interviewed. In the case of the principals, the district supervisors, and the superintendents, the interviews were unstructured. The total number of teachers interviewed, whose interview data became an integral part of this report, was 263.

In the beginning, this study was believed most likely to be fruitful if it followed a non-normative or case history approach. As noted above, the original intention was to restrict the study to instructional film. It was also intended that we restrict the case histories to two; i.e., the histories of two high schools. Considerable care was to be taken in order to discover two high schools that were similar in as many ways as possible, except for the extent to which they used films. These schools were then to be studied intensively so that the character of the forces urging or discouraging the use of films could be better understood.

With the decision to concern ourselves with audiovisual materials other than film, and to increase the number of high schools to be investigated, certain problems became acute. It was doubted that very complete case histories could be gained, and the thought grew that the study would have to become largely normative in complexion. Still, we disliked abandoning the case history approach, and we did not entirely give up this intention.

Because this part of the study was non-normative, sampling procedures were considered unnecessary. Instead, we approached knowledgeable members of the staff of the Indiana University Audio-Visual Center and of the Indiana Department of Public Instruction, to try to discover pairs of high schools in the state that were roughly comparable in size, in facilities, and in budget — but that differed as much as possible in the extent to which they made effective use of audiovisual resources. It soon became clear, however, that this was too difficult a question. We had been naive in expecting to find consensus in the answers to this question.

Next, various records were examined to find information suggestive of suitable pairings of schools. This time-consuming task was not rewarding.

It was finally decided to concentrate only on the larger school districts, so that pairs of schools could be selected from within the same district. We believed that, at the least, this would control the important factors of budget and "administrative outlook." Moreover, the final selection of a particular pair of schools selected within a district could then be based on the advice of the superintendent and the audiovisual director.

On the basis of our strenuous, but largely barren preliminary efforts, 16 "likely" high schools were selected. We then contacted the superintendents, the audiovisual directors, and in some cases, other key administrators, to arrange initial interviews. The aims of these initial interviews were to gain support for our research effort, to gain additional information for reducing the selection of schools to a workable number, and to discover pairs of schools which would give the between-schools control hoped for.

None of the superintendents or principals declined to assist us, and the problem became that of reducing the number of schools from among those originally selected. Using the general criteria for selection already specified, a reduction was made to five school districts, with two high schools per district. Plans were completed to interview in these ten high schools; but after the teachers in six of the schools were interviewed, it became clear that the task undertaken was too large. It also became clear that the differences that existed between the pairs of high schools selected from the same school district were differences largely due to factors extraneous to the purposes of the investigation.

One of the high schools in the fourth district scheduled for interviews was noticeably "better" than its paired counterpart.[1] The less well-to-do high school was more crowded primarily because of an influx of students of a lower socio-economic group. Of the four high schools remaining, one from each of the two districts involved had a noticeably "better" situation than did the school it was paired with. Moreover, the two more fortunate of these appeared more outstanding in their AV programs than any of the schools studied up to that point. It seemed the lesser evil to give up the fruitless attempt to find contrasting pairs of schools within districts, and to choose the two (presumably) better-than-average high schools for the concluding interview effort.

Preview of the report. The goal of this study is the acquisition of information of a sort which will help insure the success of an information campaign urging a more extensive use of audiovisual materials. Instructional film is of major concern, but interest is held for the "more conventional" audiovisual materials, and we do not totally exclude the "newer media." There are five interdependent phases of this effort that, while interdependent, can be isolated and characterized.

(a) In Chapter Two we report what was done to try to discover the channels of communication, or "networks of influence," encouraging or discouraging the use of audiovisual materials--primarily film in this instance. If such networks exist, it would be invaluable to know this so as to exploit them in a campaign.

(b) In Chapter Three we report on teacher attitudes toward audiovisual devices and materials. We describe the effect attitudes have upon such variables as the frequency with which films are used; the amount of knowledge about, and degree of training in AV; the deterrents to usage a teacher has experienced when using or trying to use audiovisual materials; and the manner in which certain deterrents to usage are perceived.

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[1] Not only in this case, but in general, because two schools were in the same district did not make for as much equality as was expected. Even the academically inappropriate fact that one school of a pair was a longstanding power in sports and the other was not, caused differences throughout the entire organization of the schools.

(c) Chapter Four deals with a phenomenon that has been labeled "cognitive dissonance." Cognitive dissonance refers to the uncomfortable feeling that arises when one's behavior is not in tune with one's attitudes. Thus in planning an informational campaign, it would be valuable to know how teachers who value the instructional worth of films, but who fail to utilize these films as much as they might, are best able to cope with this dissonance-producing inconsistency.

(d) In Chapter Five we describe tests of the validity of certain of our sociometric data. We describe how, at selected points, we introduced an "audiovisual message" into certain sociometrically determined networks. We then show the degree to which characteristics of the point selected correlate with the degree to which the message is diffused throughout the network.

(e) In Chapter Six we try to compensate for the special emphasis previously given to instructional film. We therefore speak of other AV devices and materials, and we address ourselves within this context to the following question: "To what degree can the findings concerning film be generalized to apply to other audiovisual devices and materials?" The answer to this question has the greatest possible consequence for the character of future information campaigns. If no generality of attitude is found, separate information campaigns would have to be planned, one for each medium or material. This extreme has, as its polar opposite, perfect generality. In this latter case, an information campaign that resulted in an increased and more effective use of bulletin boards, would accomplish the same for tapes, micro-projectors, flip charts, or any other audiovisual material or device one may care to mention.

Needless to say, a discovery of perfect or very high generality was not anticipated —nor was a discovery of no or very little generality. To justify further effort along the lines intended, however, it was necessary that a "fairly significant" degree of generality be found to exist. But, to anticipate a bit, we did not find this.

(f) The negative outcome noted above helped us to see the need to reconceptualize the problem of this study. This is done in Chapter Seven, where some purely logical difficulties are explicated.

Some odds and ends. During our survey we promised anonymity to our many respondents. Among all the helpful people, and in all the schools that put up with us, there can not have been more than two or three things that could cause anyone even mild embarrassment. But there were these two or three things, and since a few comparisons between high schools are made, the schools, at least, require names. They are referred to as Alpha, Beta, Delta-1, Delta-2, Gamma-1, and Gamma-2. The two Delta schools are from the same school district, as are the two Gamma schools.

In both the normative and the non-normative studies, the size of the Ns used in the various break-down comparisons vary. They vary for reasons other than the existence of the small but always present "no response" category. In most cases, what was done, and why, is made clear in the text at the appropriate point. However, some reoccuring types of cases are more economically noted here.

The normative (NSF) study was originally intended to be only exploratory and, therefore, some of the early analyses were carried out within a "hypothesis seeking" rather than a "hypothesis testing" orientation. The NSF sample was extremely large, and so most of these analyses were performed upon randomly drawn sub-samples. However, if something interesting but unexpected turned up, "chance" had a little better than chance probability of accounting for the outcome. In such cases it was desirable to randomly draw a second sub-sample, and test the observed contingency a second time.

The decision to include the NSF study in the main body of this report was based upon the existence of the difficulties already alluded to, that were encountered in carrying out the interview portion of the study. It was also based upon the fact that the NSF sample was very large and had a surprisingly high percentage of returns. Because of these two outcomes, it often happened that we could safely test a hypothesis by means of the NSF data, but not by means of the interview data.

In the non-normative or interview portion of the study, varying Ns most frequently resulted from the fact that non-comparable questions were sometimes asked at the different high schools. This "non-comparability handicap" was suffered in order to try and benefit in a succeeding school from what was learned in a preceeding school.

CHAPTER TWO

PATTERNS OF INFLUENCE

The *patterns of influence* that determine one's religion or politics are easy enough to trace, because most of us "inherited" these beliefs from our parents or others in the primary group into which we were born. Although no group has effects as strong and long-lasting upon its members as does the primary group, the effects of one's memberships in various groups are of vast significance.

Theoretical orientation. The concept of "group" is a necessary one in investigations of "patterns of influence." The sense in which we use "group" in technical contexts in this chapter is one which refers to a collection of persons, all of whom have psychological significance for one another. Each member of a group is aware of all the other members of the group, and he is aware of them *as group members*. The behavior of one of the more peripheral members may have slight significance for the others, while the behavior of an "opinion leader" will typically have a disproportionately large effect. Nevertheless, all members have a place in each others cognitive fields when group-related matters are in focus. This limits the size of a group to some fairly small if indeterminate number.

Group members share norms, and group members play roles that interlock with one another. Some roles are more consequential for the group than are others, and so some group members are more influential than are others. Some members are more popular than most, some have a particular know-how important to the group, some are especially good representatives of the group to other groups, and so on. Thus, in any group there is continuing intercommunication, but because of the existence of interlocking differentiated roles, "*patterns* of communication" emerge. Some group members talk a lot and listen a lot, on a wide variety of group-related problems; and they do this more with certain group members than with others. Some mostly listen a lot, or talk a lot in reference to a more specific range of problems. Some are relatively isolated. Whatever the case, patterns of communication emerge, and all actual patterns or networks of communication are also potential channels or networks for influence. An established communication pattern is probably an established influence pattern; but at least, no influence pattern can exist where there is no channel of communication.

The foregoing has direct bearing upon the design and conduct of an information campaign. As noted in the introductory chapter, a mass medium message may have effects (including boomerangs) that extend far beyond the boundaries of the audience directly reached by the message. When this happens it is likely that interpersonal relations within a group have intervened to enhance or to inhibit perception and acceptance of the mass communicator's views. A prerequisite to understanding why a mass medium message is effective or not effective is, therefore, an understanding of the high degree to which an individual's opinions and attitudes are selectively strengthened or weakened by group pressures.

Students of group behavior have described this conformity-producing mechanism. If a group member holds an opinion that is relevant to an important group goal, but an opinion not in agreement with group consensus, there occur certain highly predictable changes in group patterns of communication. At first, a disproportionately large number of messages are directed to the dissident member by others of the group, to try to bring him to the group view. This "persuasion campaign" is continued as long as progress or hope of progress in changing the person's views is held. But if, after a time, the dissident member does not begin to alter his viewpoint to bring it more in line with the group-sanctioned viewpoint, the messages directed to him drop sharply in number. Not only is this true of messages relevant to the disputed issue, but it is true of all categories of messages. Interpersonal interaction with the "unenlightened one" is infrequent and may even cease all together if the opinions involved have high relevance for group goals and are emotionally based. In such a case, the dissident is, in effect, cast from the group.

From this it will be recognized that a mass communicator's job may be difficult. If he is faced with a target audience whose commonly shared group-sanctioned attitudes conflict with those which he wishes the audience to accept, his goal may be unattainable. If he is to succeed there are two strategems to be avoided. It is as surely an error to regard target audience members as individually autonomous, as it is to regard them as a homogeneous mass. The most fruitful view, it now seems, is one that regards target audience members as members of specifically identifiable groups. These groups, in turn, support specifically identifiable beliefs; they systematically attempt to extinguish other identifiable beliefs and largely succeed at it, and they remain uncommitted in regard to still other beliefs.

The problem. This orientation led us to seek answers for two interrelated questions. We wished to learn the identity of any groups exerting influence in regard to the uses and values of audiovisual materials. Any influence would operate through communication networks, and the message content would, of course, contain information about the procurement, use, value, evaluation, etc., of audiovisual media or materials. In order to get down to a problem of workable size, we focused upon instructional motion picture films. Assuming we found such groups as described above, we wished to learn whether the informal opinion leaders who were involved operated in any very significant way in the formal school organization.

Procedure. From the definition of "group," it follows that group members are in continuing interaction with one another. Their patterns of interaction are their patterns of communication, and communication patterns, in turn, provide a frequently-used basis for defining "group structure." Group structure, thus conceived, is conveniently operationalized by means of sociometric or sociometric-like[2] procedures (Moreno, 1934).

The networks that may convey audiovisual messages are a part of the group structure. These networks are here separated into three categories according to the message source. First, there are the networks that convey various *mass media* messages about instructional films to the teacher. Examples of these are the professional journals of the different subject matter fields, and the catalogs and publications of commercial organizations that supply films.

A second category of networks are those whose source is located somewhere in the formal administrative hierarchy of the school system. These messages travel through the organizational channels of the school. They may be written or spoken messages, and they may or may not be delivered in a fact-to-face situation. These are designated as *formal networks*. The teacher is related to the formal network by being a member of at least one department of the school.

The third class of networks are those dependent upon the personal contacts arising under informal circumstances in the teacher's day-to-day, face-to-face contacts with other teachers. An example would be teachers smoking together in a lounge while discussing sports, politics, and the weather. We call these networks *informal networks*.[3]

In order to be able to construct models (i.e., sociograms) of the networks of information about films, we asked the respondents about the sources of information that had determined their own use of some particular film or films.

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[2] Sociometry, as conceived by founder J. L. Moreno, is a procedure for determining one aspect of group structure: *viz.*, that dependent upon "patterns of liking." For example, a scout master packed back into the wilderness with his troop, might ask each scout to write down the names of four boys--the two with whom he would most like to share a tent and the two with whom he would least like to share one. If in doing this, the scout master promised his troop that he would fulfill their wishes as far as possible, he would have employed the sociometric method as defined by Moreno.

Moreno, in other words, restricted the term sociometry to the situation where names were named on a basis of liking (or disliking), and where the preferences that were given, were to be actualized insofar as possible. However, the method has been extended to the point that today almost any tactic for inferring an aspect of group structure, is likely to be described as "sociometric."

[3] The term "informal" is used to describe all personal contacts a teacher may have, with the single exception of those contacts required by his formal role as he operates within the officially prescribed structure of the school.

First, we asked this question.

> Can you recall the title--or what the film was about--in the case of the two or three films you have used most successfully?

This kind of question, it was thought, would give the respondent a mental set to think specifically; that is, to think in terms of specific information about a specific film. Otherwise, it was doubted that a specific source would later be named with the regularity required. Having identified a specific film or films, the respondent was asked this question.

> Do you recall where you first learned of these films?

In response to this second question, the respondent might name either a person source or a non-person source. And so to bring him more inescapably to the matter of "personal influence" we asked this question.

> ...it has been shown that people often get many of their ideas about what's new in the world from personal contacts. In connection with such personal contacts as sources of new ideas, who would you say are the two or three persons in this school with whom you most frequently share ideas or information ?

We hoped that this last question would provide the data necessary for identifying opinion leaders in general; and that the previous question would make possible the identification of opinion leaders of a particular kind--i.e., those who were influential in the audiovisual realm. We recognized that the names given in the two situations might overlap, and indeed, findings in the literature lead one to expect this.

The procedure followed in the analysis of the last mentioned question involved the construction of sociograms--one for each school. These were plotted in the usual way to show who named whom. The "who" was the respondent and the "whom" referred to "the two or three persons" in the respondent's school, with whom he most often "shared ideas or information."

When a sociogram is drawn in the typical way, circles or other closed figures represent persons, and lines connecting these closed figures represent a "choice" or, in the present context, a "communication link." The result is a picture a little like a fish net, and such pictures often reveal a great deal by inspection. Isolated individuals, popular individuals, and various types of patterns may be seen. If other information about the group is at hand, one is frequently able to relate it to the sociometric patterns observed.

But while the "simple sociogram" may make obvious a number of group characteristics that would otherwise be missed, other such characteristics are not at all obvious. Reference here is to what have been called "two-step connections," "three-step connections," or, in general, indirect connections (Festinger, Schachter, and Back, 1950). The "simple sociogram" shows only one-step or direct connections.

In the present study a direct (or one-step) connection between two persons indicates that one person has named the other as a person with whom he frequently shares ideas. Of course these two persons may mutually select one another. This is referred to as a reciprocal direct connection.

An indirect connection between two persons involves, at the least, some third person. For example, if A names B, and B names C, then A can be thought of as being connected to C, though only indirectly, through B. This is a two-step connection. If A names B, B names C, and C names A, the loop is closed and this is called a reciprocal two-step connection.

The reader can readily extrapolate to three-step and yet more indirect connections. The importance of considering indirect connections is that they may, and they often do, "mediate influence." For example, B may influence C along the lines that A originally influenced B. It often turns out that a seemingly poorly connected person, as determined from the picture of direct connections in the simple sociogram, is, in truth, well connected and very influential. This is so because, in such cases, the few persons with whom the individual is connected, are themselves especially well connected. As with Rasputin, the possession of strong influence over only one other (the Czarina in his case), can be sufficient to accomplish considerable good or evil.

These are the only kinds of sociometric analyses used with which the reader may be unfamiliar. The manner in which the calculations are performed are described in Festinger, Schachter, and Back (1950).

I. Results

Recall that the respondents were asked: (1) with whom they shared ideas most frequently; and (2) the sources of information from whence they first learned about the two or three films they had used successfully. One important way in which the data from these questions was to be analyzed could not be achieved. The reasons for this are our first concern.

If the respondents, in response to the question asking the sources of information for the film they had used, had given names of "informal persons"; and if one or more of these "informal persons" were also named by some substantial proportion of the respondents in answer to the question asking the names of those with whom they frequently shared ideas, this finding would have provided confirmation for the first link in our chain of expectations. However, we did not find this to be true.

Let us call persons often named in response to both of the above questions "opinion leaders." If we had found opinion leaders, as here defined, we would have been justified in proceeding, by sociometric means, to determine the character of communication networks that could be designated as networks that channeled information about films. As it turned out, there were few opinion leaders. Very few sources of information were person sources of any type, whether formal or informal. Rather, the more commonly named sources were the district audiovisual center, catalogs, or the department.

In the context of the original plans, the question asking about information sources for films was to have served an ancillary function *vis-a-vis* the question asking about persons with whom the respondent frequently shared ideas. But communication networks relative to the utility of instructional film failed to be visible. It was therefore decided that this question should be treated largely independently, for whatever information it might provide on its own merits.

As a consequence of the above, the following material reporting the result of our efforts is organized differently than we anticipated would be the case. It is organized to show what we *did* find, and to highlight some reasons why what we did find was not what we anticipated we would find. We first discuss the findings relevant to the existence of influential persons. Reference is to persons who are influential *in general* — i.e., they may or may not be influential in ways relevant to audiovisual matters. We then discuss "AV-relevant" influence.

Sources of Influence: General

First restricting ourselves to Alpha High School, we asked: (1) who are the teachers that comprise the informal groups at Alpha High School; (2) who are the influential persons in these groups; and (3) in what areas do these influential persons exert influence? Then, in regard to both Alpha High School and others of the high schools as well, we asked: Do department heads or other "formal persons" have a disproportionate amount of influence?

We had anticipated the existence of two or more distinct groups within the same school--groups known to be at least relatively distinct by virtue of a lack of intergroup connections, but known to be at least relatively cohesive by virtue of a large number of intragroup connections. In terms of one-step connections, the only "groups" that appeared to coalesce sufficiently to be dealt with were those whose membership was co-extensive with departmental boundaries, though this by no means held for all departments. However, when two-step connections and yet more indirect connections were considered, it was seen that there were a very few teachers who were relatively isolated, while the majority were loosely connected so as to comprise a single fairly large group. This made further analysis of the sort intended, appear not to be merited. This conclusion was subjected to further testing.

Not all the members of the single loosely organized group noted above, were equally influential. One person, the assistant principal, was the most highly connected person in the school. He had 14 one-step connections and 55 two-step connections--connections designating him as one with whom the namer frequently shared ideas or information. When the assistant principal was removed from the analysis, the large loosely organized group tended to break apart, generally along departmental boundary lines. This further supported the conclusion of the previous paragraph.

The next most frequently named person had eight one-step and 42 two-step connections. The biggest difference in degree of connectedness occurred between the third most connected and fourth most connected persons. These differences were 42 vs. 29 two-step connections; and 8 vs. 5 one-step connections, respectively. From the fourth person on, there were no differences among persons large enough to be considered non-chance differences.

In the interviews with the principal and assistant principal at Alpha, unusually good rapport was established, and it became relatively easy to ask these men directly whom they regarded as the "better" or "more superior" teachers and whom they regarded as the "more influential" teachers in their school. These two administrators were interviewed individually by two different interviewers, and there was no possibility of a lack of independence in the two sets of judgments thereby attained.

There was good agreement between these two administrators. Of eight teachers named by the principal and nine by the assistant principal as very superior *and* influential teachers,[4] six names were common to these two lists, and five names were not. None of the five names *not* named in common as being very superior, failed to be among the names specifically mentioned in a favorable way by both men.

To test these data, we sought to discover whether the eleven teachers named by the principal and assistant principal were also the teachers often named by their colleagues as persons with whom they frequently shared information. If they were, they could, with reasonable safety, be regarded as influential persons. The rank order of teachers in terms of the sum of their one-step and two-step connections was examined. Ten of these 11 teachers were among the 21 most connected teachers as determined by their colleagues. The eleventh was near the middle. This would not likely have been the outcome if the principal and assistant principal, on the one hand, and the teachers, on the other, had employed different criteria for making their judgments ($p < .01$, chi square two-tail test, 1 *df*, $N = 58$).

The impetus for the analysis which will be described next came from the discovery that the removal of the highly interconnected assistant principal fragmented the loosely connected group comprising the bulk of the teachers in the school. Moreover, this fragmentation was along departmental lines. We wondered what an examination of the other influential individuals would reveal in this connection.

The procedure was to hold regard for the eight most influential persons as determined by the combined judgments of the principal, assistant principal, and faculty, but omitting the assistant principal as one of these. These persons were formed into a matrix showing the names of persons they had chosen as being those with whom they frequently shared information. They often named one another, but any person who was named, whether among this original eight or not, was placed in the matrix and his "choices" also were recorded along with those of the original eight. This might have drawn all or nearly all the faculty into the picture, in which case no new insights could have issued. This did not happen, however. The total number finally constituting the matrix was fifteen.

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[4] Neither the principal nor the assistant principal distinguished between the two named traits so far as could be told from their responses. Of course it may have been that the superior teachers were also the more influential teachers. In any case, it was fairly clear that *influential* teachers were named and this was our only concern at this point.

The matrix was squared and cubed in the manner described by Festinger, Schachter, and Back (1950), to reveal two-step and three-step connections. A score was then determined for each person in the matrix by summing the number of one-step, two-step, and three-step connections that he possessed. These scores were then ranked.

The five most interconnected persons in this group of fifteen were all members of the science department. In the original group of eight, there were two science teachers, but three more were brought in by being chosen by one or more of the original group of eight. In terms of total number of choices, the science department head was second most connected, but in terms of reciprocal direct and indirect choices, the science department head was the most highly connected person in this group and probably in the entire school. (The assistant principal was a possible exception.)

Of direct relevance to the question at hand was the finding that among these most influential persons, there was evidence of a departmental basis for the choices that were made. Of a total of 32 direct connections represented in this group of 15 teachers, 22 were intradepartmental and 10 were interdepartmental. Of these 10 interdepartmental connections, six were accounted for by only two members. These two did guidance work for the school.

There can be little doubt about certain things at this point. Alpha was an organization of loosely connected departments; and interdepartmental connections were maintained by the assistant principal, two guidance people and, it seems likely, one or two others as well. If a cohesive informal group existed, it had boundaries that were *very nearly identical* with those that marked off the formal unit, the science department.

How influential are the department heads? Three of the 11 persons named by the principal and assistant principal as superior and influential teachers were department heads. One department head was among the highly interconnected group according to teacher responses (fourth from top), but was not named by either the principal or assistant principal in a favorable light. In fact, the contrary was the case. There were two other department heads. One of these was in the top half by teacher judgments, the other was not. There were too few department heads to justify a statistical test.

Approximately 40 per cent of the persons named when all schools were considered were in the same department as the namer. The department head, however, was not mentioned as frequently as one might expect. Out of a total of 117 teachers in 16 departments, 45 per cent named the department head as a person with whom they frequently shared ideas or information.[5]

When only within-department choices were considered, there was no very noticeable tendency for department heads to be "stars." (In sociometric jargon, "stars" are persons who are frequently "chosen" by others, few of whom are in turn chosen by the star. In the case where nearly everyone chooses those persons who in turn choose him, a *clique* exists and no "star" is discernible.) In four of the 16 departments referred to above, the department head was the person most apt to be named by the teachers in that department. In seven of the 16 cases, one or more teachers in each department were named equally as often as was the department head. In five of the departments, one or more teachers were, in each case, named *more* times than was the department head. In one of the five departments last noted, the department head was a near "isolate." Of the eight teachers in this last mentioned department, only one named the department head as a person with whom he frequently shared ideas or information. On the other hand, four teachers in this department were named four times each, and one was named two times.

Information Sources About Films. In response to the question that asked the teacher where he had first heard about the two or three films he had used most successfully, either person sources or non-person sources might be named. A category-set for classifying these responses therefore had to be developed. The categories chosen were arrived at inductively. Even so, no formal content analysis of the responses was required. This was because only seven types of sources were named with any very great frequency, and with only a few exceptions, the responses given were readily classifiable in one or another of these seven categories.

If the information that a teacher received about a film came from a person source, the person named might play either a formal role or an informal role *vis-a-vis* his namer. For example, if a teacher named his department head, the principal, the district supervisor, a curriculum supervisor, or other such person, this person held a position in the formally structured hierarchy of the school that was superordinate to the teacher who named him. When such a source was named, it was categorized as a *formal* person source. If the teacher named another teacher or other person *not* administratively superordinate to him, this was counted as an *informal* person source. Of course a "formal person source" thus defined might, in the usual social-psychological sense, have exerted influence in an informal interpersonal situation. If so, it would be more meaningful to categorize the source as *informal.* However, there was no way to reconstruct these past events in the time available to us with each teacher.

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[5] In determining this percentage, only departments having five or more members were considered. Also, a department was omitted from consideration if the majority of the members had not been interviewed. Thus the total membership of the departments considered was 125. Only eight of these 125 were not interviewed.

The responses to the previous question (asking teachers where they had first heard about the two or three films they had used most successfully) were tabulated for three departments: science, mathematics, and social studies. Only sources of films mentioned frequently by at least one school, or sources mentioned two or three times by several schools, were tabulated.[6] The seven categories naming sources of information about instructional motion picture films are given in Table 2.1. An examination of this table reveals that when the various individual source-categories are combined in the three-fold way described earlier, formal sources are most important of all, while informal sources are least important.

More different "formal persons" and "formal instrumentalities" were named, and a bigger percentage of all the responses given named formal sources, than was true of either mass medium sources or informal sources. Formal networks accounted for 57 per cent of all the responses naming sources of information, while informal networks, on the other hand, accounted for but 13 per cent of the sources named. This left 30 per cent for the "mass media." (These percentages were based on totals that excluded the "none" and "other" categories given in Table 2.1.)

The only information sources that could be construed as mass media were catalogs and television. One kind of mass medium response that we anticipated is illustrated by the professional journal, an advertisement, or a brochure. It appears that this sort of mass medium source is inconsequential in its effect. With the exception of a few mathematics teachers, journals and similar mass sources were not mentioned. Such sources were not mentioned often enough to justify the inclusion of a category to contain them.

When we examined the responses of teachers who named television as an information source, we discovered that the majority were members of a single department at a single school, and reference was to a single television program. The conclusion that remains is that catalogs are the only significant mass medium informational source about films that was effective with these teachers.

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[6] In interviews at the first two of the six schools described here, the respondents were asked to name only one film, whereas in the four succeeding schools, they were asked for the names of "two or three" films. A preliminary examination of the data from the first two schools showed that we were not gaining the evidence for informal groupings that we anticipated, and we thought that by requesting the titles of a larger number of films (thereby increasing the number of sources of information named), that we might then succeed in this.

As was indicated in the introductory chapter, these improvements in the interview schedule--or, at least, these presumed improvements--were gained at the cost of some degree of noncomparability. Thus the mean number of sources named by teachers in the first two schools was one response per teacher, whereas the mean in succeeding schools was two responses per teacher.

Table 2.1

Percentage of Responses, by School, Naming Each of the Seven Most Frequently Mentioned Sources of Information about Film (Non-normative Group)

Information source [a]	The Schools						Percentage averaged over six schools
	Alpha	Beta	Gamma-1	Gamma-2	Delta-1	Delta-2	
District AV Center (F)	45.24	30.19	19.35	12.12	3.03	9.09	23.15
Catalog (M)	0.00	11.32	38.71	24.24	12.12	45.45	17.24
Informal Person (I)	26.19	3.77	6.45	6.06	12.12	0.00	10.34
Department (F)	4.76	0.00	3.23	12.12	42.42	0.00	10.34
Television (M)	0.00	18.87	6.45	3.03	3.03	0.00	6.90
Preview or Workshop (F)	9.52	7.55	0.00	9.09	6.06	0.00	6.40
Building Coordinator (F)	0.00	5.66	9.68	3.03	6.06	18.18	5.42
Other	7.14	16.98	9.68	15.15	9.09	18.18	12.32
None	7.14	5.66	6.45	15.15	6.06	9.09	7.88

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[a] The Letter "F" designates "formal source." The "M" and the "I" designations signify "mass medium source" and "informal source" respectively.

Table 2. 2

Number of Owned and Rented Film Titles Used in Six Schools
During Fall Semester, 1960
(Non-normative Group)

Subject area of film	The Schools											
	Alpha		Beta		Gamma-1		Gamma-2		Delta-1[a]		Delta-2	
	Owned	Rented[b]	Owned	Rented	Owned	Rented	Owned	Rented	Owned	Rented	Owned	Rented
Mathematics	1		12	8	0	0	0	0	0		4	0
Social Studies	1		77	18	18	15	12	20	5		31	61
Science	85		71	60	19	92	35	131	5		41	22
Others	104				10	6	45	4			30	46
	—	—	—		—	—	—	—			—	—
Total	191	25	370[c]		47	113	92	155			106	129

[a] Delta-1 did not differentiate between its use of owned and rented films; nor did it report any use of films in the "others" category.

[b] The category "rented, " includes all films not stocked in the local library. "Owned" films are films in the school city film library.

[c] The total number of films used at school Beta was not reported to us. This estimate was computed by calculating the mean ratio of mathematics films plus social studies films plus science films to the total usage figure for the four schools reporting complete data, and multiplying the sum of mathematics, social studies, and science films at Beta by this average ratio.

When the source categories were examined individually, rather than as combined according to the three-fold category-set used above, other findings of interest appeared. For example, both the most and least frequently mentioned sources were "formal" as we have defined this category. These were the district AV center (the most frequently mentioned source), and the AV building coordinator (the least frequently mentioned source).[7]

The chances that the AV center would be named as a source of information about films should be a function of the ability of that center to supply the needs of the teachers it serves. None of the interviewers who were in a position to judge, had the slightest doubt but that Alpha and Beta had better AV centers, including better film libraries, than did the Delta and Gamma schools--better, that is, in being larger, more complete, and more active. However, no safe decision could be made on this point relative to differences between the Delta and the Gamma AV centers. For this reason, we attempted to develop a quantitative index of "adequacy" for the film libraries in the four locations where we were involved, in order to see whether the observed differences in the frequency with which an AV center was named correlated with its "adequacy."

It is a more difficult task to arrive at a sensitive index of "adequacy" of a film library than one might imagine. (We will not detail the pitfalls.) We attempted to compare the six schools in this study with a very simple measure of "adequacy": viz., the ratio of the number of films owned by the AV center, that were used in a given school, to the total number of films that were used by that school. Table 2.2 presents the best information we could get from the responsible persons involved as to the number of owned and rented films shown by the teachers in the schools in question during the fall term of 1960. Table 2.3 compares the just described index of adequacy as based on the Table 2.2 data, with the proportion of responses in each school that named the AV center as a source of information about films.[8]

The correlation between these two sets of numbers is very low. Considered across all six schools the data are, therefore, very weak support for the suggested explanation. If, however, one feels justified in grouping Alpha and Beta together, to compare these two schools with the other four schools, a small degree of confidence in this explanation results.

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[7] The reader is cautioned against taking this finding as a comment upon the skills or interests of the building coordinators. In some instances, these men had no time given to them for carrying out their assignment. At best, they were given a very little "release time."

[8] The data on the number of rental and owned films that were used by the teachers in the schools studied were given us by the AV directors of the districts investigated, except in the case of the Delta schools. Delta data were supplied by the two Delta building coordinators. The efforts of these educators were much appreciated.

There were doubts about the validity of these data for some purposes. The different districts varied in the category systems they used in order to catalog their films, and also in the completeness of their records.

Table 2.3

The Frequency With Which the District AV Center
is Named as Source of Information About Film Titles,
Compared to the Proportion of Total Films Used By a School
That Are Also Owned by the School District

	Alpha	Beta	Gamma-1	Gamma-2	Delta-2	Delta-1
Proportion of responses naming district AV Center	.45	.30	.19	.12	.09	.03
Proportion of films used that are owned by the school district	.88	.65[a]	.29	.37	.45	? [b]

[a] This percentage figure was based upon the population of mathematics, social studies, and science films. No report for other types of films was received from Beta. The other percentages are based upon the population that includes all films used by a school during the designated period of time.

[b] Delta-1 did not report rental and owned films separately.

This "finding" is uncertain and incomplete, but this and other between-school differences "make sense" in terms of several different factors having to do with the physical facilities available at the different schools and with differences in the administration of the AV programs at these schools.

The whole problem was far from simple. Our original intention was to compare schools in the same district (same city in all present cases), along some lines to be suggested. A few of the numerous imponderables making for differences of all kinds on all levels, should have been relatively constant for two such similarly located and administered schools. However, two of the most similar schools were from different districts, and two of the schools that contrasted sharply were from the same district. Despite this (and partly because of it) a few things could be clarified.

Alpha and Beta were the two similar schools that were from different districts; while Delta-1 and Delta-2 were the two schools that contrasted appreciably, even though they were from the same district. Alpha and Beta surpassed the two Delta schools in the adequacy of their film libraries, including ease of access to the films available there. Alpha and Beta teachers could generally order their films directly from the district AV center and they could usually get films on short notice. No budgeting procedure was involved when the film came from the district AV library.

The Delta schools, on the other hand, had to depend more upon rental films, and as was the general practice, budgeting procedures were involved in the case of rental films. Correlative with this, was the finding that 45 per cent of all source-naming responses at Alpha, and 30 per cent at Beta named the district AV center; while only three per cent of Delta-1 responses, and nine per cent of Delta-2 responses named this source.

Alpha and Beta were thus seen as relatively similar, in that they named the AV center rather frequently. They were also similar in tending not to name the AV building coordinator. Alpha respondents did not name the AV building coordinator even one time, and Beta teachers gave him only six per cent of all their responses.

In not naming the AV center, the Delta schools were unlike Alpha and Beta, and in agreement with each other. It was reported that these schools differed from one another. As Table 2.1 reveals, they differ primarily in that Delta-1 named "the department" with a frequency of 42 per cent and "catalogs" with a frequency of 12 per cent; while Delta-2 did not even name "the department," while giving "catalogs" 45 per cent of all responses.

Control of film use was less centralized at Delta than was true at the other AV locations we examined. In the Delta Schools, for example, the district AV director did not have records of film use for the schools in his district, and he therefore referred us to the AV building coordinators for this information. This was not true for the other districts. As a result of this decentralization, administration differences within the school were more clearly reflected in the sources of information about film that the teachers named than was true elsewhere.

The observation this now leads us to report is subjective and complex. It has interest, though, and there was unanimity of view among the interviewers. Reference is to a judgment about a difference in administrative attitude in the two Delta schools--a difference that corresponds with the more salient differences between these schools of the sort just noted. This was to the effect that Delta-1 High School was organized along rather rigid authoritarian lines, whereas quite the opposite characterized Delta-2. The hard-driving and efficient Delta-1 principal had some strong ideas, and he usually implemented them "through channels." The principal at Delta-2 was noticeably more easy going. He displayed a markedly laissez faire attitude, and this dominated his dealings with his faculty.

The "authoritarian" principal at Delta-1 had his department chairmen get their teachers together during the spring term to choose the films they would show the following year. In at least one of the departments--and very probably in several of them--all the members of the department regularly showed all the films chosen. No source other than "the department" was mentioned frequently by Delta-1 teachers (see Table 2.1).

Delta-2 teachers, on the other hand, were pretty much on their own. We noted that they did not mention "the department" a single time as a source of information about films. Rather, they most often reported "catalogs" (45 per cent of responses). No other school reported catalogs so frequently. The building coordinator was the second most frequently named information source by Delta-2 teachers (18 per cent). No other school mentioned this least-mentioned of all sources anywhere near this often.

Teacher attitudes in the two Delta schools were quite different; presumably as a consequence of this difference in administrative procedure (or attitude). From the responses to an eight-item scale described in the following chapter, it seemed fairly clear that the two Delta schools had the most serious problems in booking films. Of interest is the difference between these two schools. Booking problems, mechanically speaking, should have been about the same at the two schools or, if anything, a bit simpler at Delta-1 because the principal and department heads set the machinery in motion for ordering rental films once each year. Delta-2 teachers also had to order their films the school year preceding the year of intended use to be certain of getting them, but they were not officially cajoled into doing so. Delta-1 teachers who used the films officially supplied for them, judged their booking problems to be more severe than did Delta-2 teachers.

The reader may have been led by the foregoing to the conclusion that when it comes to rental films, information sources are primarily two: viz., "catalogs" and "the department." If what is true of the two Delta schools is true generally of schools that must depend largely upon rental films, we would expect a correlation between the proportion of rental films that are used by a school, and the proportion of choices made by the teachers of that school to the two categories of information sources just named. Table 2.4 presents this information and tends to confirm this expectation.

Table 2.4

Frequency of Use of Rental Films as Related to the
Proportion of Responses Naming "Catalogs" and "the Department"
as Sources of Information About Films

	Gamma-1	Gamma-2	Delta-2	Beta	Alpha	Delta-1
Proportion of rental films [a]	.71	.63	.55	.35	.12	
Proportion of responses naming catalogs,[b] and the department	.42	.36	.45	.11	.05	.54

[a] Data were based upon total films used regardless of subject area of film, except in the case of school Beta. The figure for school Beta was arrived at in the manner explained in Table 2.3.

[b] Catalogs from the district AV centers (when specified) were included in the category "district AV center." The category here designated "catalogs," includes catalogs from rental agencies, sponsored films, and other such sources.

Table 2.5

Percentages of Responses in Each Department Attributed to Different Sources of Information About Film

Source of information about films	Department Math	 Science	 Soc. Studies	Average percentage over departments
District AV Center	14.81	31.25	20.29	23.15
Catalogs	5.56	21.25	21.74	17.24
Informal Person	1.85	7.50	20.29	10.34
The Department	11.11	8.75	11.59	10.34
Television	3.70	11.25	4.35	6.90
Previews, Workshop	5.56	11.25	1.45	6.40
Building Coordinator	1.85	2.50	11.59	5.42
Other	27.78	6.25	7.25	12.32
None	27.78	0.00	1.45	7.88

Table 2.6

Number of Teachers Naming Sources of Information
About Film by School and Department

Department	Alpha	Beta	Gamma-1	Gamma-2	Delta-1	Delta-2	Total
Mathematics	8	11	4	7	9	5	44
Science	6	7	6	5	9	2	35
Soc. Studies	7	8	4	4	11	4	38
All Three Departments	21	26	14	16	29	11	117

The foregoing conclusions are based partly upon the subjective judgments of the interviewers, but even in their quantitative aspect there is difficulty at certain points because in several instances the quantitative interpretations rested upon very small *Ns*. The *N* at Delta-2, especially, is quite small. The conclusions drawn are, consequently, to be regarded with some suspicion. To help the reader decide just how suspicious to be, certain additional data are presented. These are the data in Table 2.5, wherein the Table 2.1 data are broken down by departments; and the data in Table 2.6 wherein the "raw" frequencies are presented.

It became quite obvious that the subject a teacher taught had something to do with the average number of sources of information about film that he gave. Thus, science teachers named an average of 2.29 sources of information about film, social studies teachers averaged 1.79 such responses, while the average for mathematics teachers was only 0.90 responses. Correlated positively with this, was the average number of films used by the teachers in these departments. This correlation would seem to be an "artifactual necessity" because information sources were sought only for those films the teacher had actually used. However, this suggests that frequency of film use, and not just the number of sources mentioned, is a function of the subject a teacher teaches.

It was indefensible to compare departments on frequency of film use *within* a single school, because the number of teachers available for interview was highly variable as between departments. (*Ns* would have been too small in any case.) It seemed justified, however, to average usage scores within departments *across schools*. We did this.

Mean film usage scores were computed for each of the three departments previously dealt with: *viz*., science, social studies, and mathematics. These computations were based upon the teachers' statements of the number of different films that they had shown during the fall semester of 1960. They were computed for five of the six high schools studied.[9] A Kruskal-Wallace one-way analysis of variance (Siegel, 1956) between departments showed that there was a significant difference in film usage between departments, when taken across schools ($p < .01$).

This finding restricts what are permissible between-school comparisons. It is necessary to cancel differences between departments before testing for differences between schools.

Mean film usage scores were computed for each of the three departments in five schools as before. The test used was the Friedman two-way analysis of variance (Siegel, 1956). Between-school differences in the frequency of film usage were not significant when differences associated with the subject a teacher taught were eliminated.

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[9] The number of teachers interviewed in each of the three departments at Delta-3 was so small that this school was not included in the comparison. This was the smallest of the six schools we studied. In addition, we were faced with some especially severe scheduling difficulties, making it impossible to interview as completely as we did at the other schools.

Summary comments. It seems clear that informal groups existed and that group members differed in the degree of their influence. But it has not been determined, and indeed it apparently was not the case, that any very noticeable number of the more influential teachers exercised influence in the area of AV matters.

We know now that this should have been anticipated on logical grounds alone. This can be seen when it is considered that the film message is often technical to such a degree that a teacher can with profit discuss a particular film only with other teachers whose academic backgrounds are similar to his own. This means that a teacher is not likely to discuss a film with teachers outside his own department. But in order for a teacher to be classified as an AV opinion leader--as we had set one criterion--it was necessary that he be named as one who was a source of information about specific films his fellow teachers had used, and by a "fairly large" number of these fellow teachers. Yet for the reason just mentioned, any exchange of information about a specific film is not likely to occur outside the group of teachers concerned with the specific content treated. In view of the small number of teachers to be found in any one subject area, the probability of this happening is small.

This situation contrasts in a consequential and often overlooked way, with a type of situation reported later in this chapter where we describe the only case of opinion leadership that we found. This case involved an individual who was highly effective in promoting the use of the overhead projector. The point of present interest concerns a difference in the kind of information mediated by this opinion leader, and the kind of information that would have to be given if one were to promote the more extensive use of instructional films. In the case of the overhead, the opinion leader referred to explained the wide variety of uses teachers in general could make of this communications vehicle. This kind of information, in not being restricted to one particular subject-matter area, was of interest beyond the boundaries of any particular departmental (or other subject-matter oriented) group. As far as an information campaign is concerned, this latter situation is very different from the situation described earlier. The distinction is between that class of AV devices whose use is restricted to mediating predetermined (or non-teacher produced) messages, and that class of devices whose use does not restrict the teacher in this way, or at least to this degree. The point is of sufficient importance that we will return to it in the concluding chapter.

Because it may be an aid to a more accurate interpretation of the responses to the question on "sources," a second point needs to be made at this juncture. To the question on "sources," the respondent was first asked to name the titles or tell what the films were about, in the case of films he had personally used. Only after giving this information was he questioned as to where he had first learned about these films. We hoped by this procedure to get as far away from selective memory as we could, for we learned early that to ask about film qua Medium, even if defensible for some purposes, invites vague, highly general, and obviously stereotyped answers. But in our zeal to avoid the particular difficulty noted, we may have invited another.

For example, a teacher may have confused the physical point of origin of a film he had used, with the source of information from whence he had first learned of the existence of that film. This confusion would seem likely in cases where a teacher had made extended use of a film, perhaps lasting over a period of several years. Moreover, the wording of this question on "sources" may have reduced the possibility of a teacher naming any new films that might have come to his attention, as in an advertisement in a professional journal. It is probably true that new films are less widely available for a teacher's use than are films that are not so new. If this is correct, it is probable that the number of responses that named mass media as sources of information about films was underestimated.

There is an alternative wording of this question on "sources" that we might have used to avoid the noted restrictions. This alternative would have been to ask the respondent the name, or what the film was about, in the case of the two or three instructional films he had most recently become aware of. This alternative form of the question, like the form that we used, gives the respondent an inescapable mental set to think about specific identifiable film titles, thereby increasing the likelihood that he could reliably recall the specific information source responsible for his knowledge.

If we had asked this question in the alternative form, the information recorded in Table 2.1 would have been of a different character. The district AV center, which was the most frequently named source of information about films, would almost certainly have received fewer mentions. The alternative question just noted would draw from an increased range of potential responses, and this would have altered all the categories.

The alternative form of question suggested here may have been preferable for gaining data of the sort presented in Table 2.1. But it is not at all clear that, in terms of the achievement of our original goal, this same choice would have been preferable. The question asking the sources of information about films the teacher had actually used, standing in ancillary relation to the question asking the teacher with whom he frequently exchanged ideas, might have been adequate for its assigned purpose, had the "networks" and "opinion leaders" we sought actually existed. In brief, differences in the extent to which teachers use instructional film appear to be due to the teacher's subject area, and to differences in facilities and administrative organization, rather than to anything of the sort we had sought. In another realm, however, a most significant exception stands out, and this is shown by the following example.

II. An Example of Informal Opinion Leadership

The respondent in this example admired the overhead projector. He admired it so greatly, and he was such a respected and influential person, that he had exerted a great deal of influence in building admiration for the overhead in others, thereby effecting a marked increase in its use at Alpha High School where he taught. Because of his unique role, this respondent was often discussed in our research group; and as a result we came, in time, to refer to him as the "overhead projector man." For convenience, we have so designated him here, using the initials O. P. M.

O. P. M. was the head of the science department and he would therefore be classified as a formal influence source, were it not for the fact that his influence had not been restricted to the members of his department. His influence extended above and below him in the administrative hierarchy, and it extended beyond the boundaries of his high school.

We learned of O. P. M. in our initial visit with the superintendent and the AV director of O. P. M. 's school district. They told us about this remarkable individual and about some of the changes he had wrought.

O. P. M. 's interest in the overhead began when he first observed its use at a National Science Foundation summer institute. Upon his return, he began talking about the marvels of the overhead, and he began to prepare some transparencies for it. He was soon monopolizing one of the projectors, and at just about the time that he was getting the members of his department interested in this device, O. P. M. 's fellow department members wanted to use the overhead, and they wanted to use some of O. P. M. 's transparencies. Demand soon exceeded supply, but O. P. M. made his voice heard. More projectors were acquired, and a system for sharing transparencies was worked out.

The method for sharing transparencies was as significant for developing interest in the overhead device as it was sufficient unto its purpose. The AV center made equipment and materials available so that interested teachers could make transparencies. Master copies of these teacher-made transparencies were produced, filed, catalogued, and stored in an accessible location. Any teacher could draw from this growing stockpile for his own teaching provided only that he had contributed one transparency to the communal effort. We can not objectively assess the effect of baptizing the teacher by fire--i. e., by requiring him to produce one of his own transparencies before letting him have access to the pool--but we are personally convinced that this affected a greater interest in this particular AV aid than would otherwise have occurred.

O. P. M. was a central figure in all this. He exerted influence upon the district AV director, and the superintendent. They in turn responded with alacrity. O. P. M. 's efforts got overheads placed permanently in every science classroom in Alpha high. Other departments were using or expecting soon to use overhead projectors in their classes.

O. P. M. helped his principal make overhead transparencies for a talk the principal was to give to the P. T. A. The principal remarked upon this in our interview with him. He felt his presentation was very effective in a large measure because of the visual aid made possible by the overhead projector.

The overhead was not often mentioned in the responses to interview questions, nor in the informal conversations we had with teachers and administrators in five of the six schools studied. This was not the case, however, in O. P. M. 's school. In one interview question the teacher was presented with a printed list of some of the "newer" media or materials. This list included the overhead. The teacher was asked if he was familiar with any of the listed devices, and if he was, he was asked two further questions (see below).

The analysis of these results was in terms of a comparison between O. P. M. 's school, Alpha, and Alpha's "equal" or "near equal," Beta. Almost twice as many Alpha teachers were familiar with the overhead as was true of Beta teachers (98 per cent vs. 56 per cent). One quarter of the teachers at Alpha had used the overhead, and all but one of the users judged this device to be "quite useful" (in contrast to the alternatively available judgments of "moderately useful" and "not very useful"). These figures for Beta were ten per cent and eight per cent respectively. On all three measures (familiarity with the overhead, its use, and the judgment of [illegible] usefulness) Alpha came out on top. And on all three comparisons, the differences between the two schools were significant at the five per cent level of confidence or better (chi square, two-tail tests, 1 *df*, *Ns* of 51 and 87).

If the reader will now direct his thoughts back to the earlier discussion of "influence patterns" at Alpha High School, a few things can now be tied together.

O. P. M. was one of the 11 persons named by the principal and assistant principal as a superior and influential teacher. In the sociometric analysis of the school and of the science department, O. P. M. showed as one of the "better connected" teachers. In the school as a whole he was near the bottom of the top fourth. In his own science department he was only a little better connected than the others. However, his department as a whole was so highly interconnected to begin with, that there did not exist the possibility of any one person standing out as an obvious "star." In other words, although this was a department in a school and, therefore, a formally constituted organization, there can be little doubt but that it was a highly cohesive department, and one that displayed many of the characteristics of an informal group.

O. P. M. 's relation *vis-a-vis* the other most influential persons at Alpha is significant. O. P. M. was one of the eight influentials forming the core of the sociometric analysis of 15 persons, wherein the five most connected persons were all members of the science department. O. P. M. was at the very top of this list of influentials in terms of 2-step and 3-step *reciprocal* connections. And he was second from the top in terms of the total number of connections.

III. Summary Interpretations

There were informal groups and informal opinion leaders in the six schools investigated. To our knowledge, however, there were no teachers who had the habit of informing, advising, or persuading on topics relevant to the uses or values or abuses of instructional films in any situation outside what might be called "the line of duty." We have no doubts but that, like the whooping crane, there are at least a few such creatures in existence.

Before we arrived firmly at the view that informal opinion leadership was virtually nonexistent in respect to the promulgation of the values of film, we examined the relationships between respondents and the persons they named as sources of information about the films they had used, but without regard to any concomitant informal group memberships of these persons. The relationships given this additional attention were those found to exist in the two schools where the number of such "informal sources" was greatest.

It was found that a few of the names of "person sources" could not be identified, but the majority were identifiable and they were teachers teaching the same subject as the person giving the name. Indeed there was not a single identifiable instance in which an "informal person" was a teacher in the same school as the respondent who named him but in a different department.

After asking the teachers to recall films they had used, and where they first learned about these films, we then asked with whom they, in turn, had discussed these films. Roughly a third replied that they had not discussed the films with anyone at all; while more than half of them reported discussing one or more of the films with someone else in their own department. Sundry replys constituted the remainder, but not a single one of these sundry replys named an "informal person" outside the respondent's own department.

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There is a final observation that is relevant to the topic of the present chapter, and we conclude with it.

The interviewers, in spending two or three successive and long days in the same school building, were each enabled to act in the manner of a participant observer on several occasions. The clipboard, the interview schedule, and the pencil were set aside and the discussion was joined over a cup of coffee. During these moments certain impressions were formed.

One impression was that these groups were less cohesive than the informal groups that typically emerge in many occupational settings where co-workers are thrown closely together. If so, there are at least two factors that could account for this isolation among the teachers in the same school building. First, teachers are closeted with their pupils in a classroom away from all the other teachers throughout most of the hours of the day. And second, when teachers are freed from the management of their classrooms and are visiting with other teachers, they are often surrounded by students. This produces a functional isolation of teachers so far as the discussion of many of their mutual interests is concerned. It would not be ethical for the teachers to discuss many of their problems where a student might overhear. It was only during the twice daily coffee and smoking breaks (given most of the teachers we interviewed) that free and easy interpersonal interaction was possible; and only then in the situation where the teachers could take these breaks in a teachers' lounge. Conditions such as these would seem to account for the pivotal position of certain of the nonteaching staff (such as were discovered at Alpha) in linking together the largely departmentally determined subgroupings that were found within all the schools.

We were struck with some of the effects of this relative isolation. If a teacher can relax and "let himself go" for only two short periods of time during his work day, and if he smokes and if the only place that he can smoke is in the boiler room, *this alone may be the major factor determining his closest school-time associates.* Indeed, this was exactly the case at one of the six schools studied. The teachers who smoked, plus a few others who didn't particularly like the nonsmoking group, met twice daily in the boiler room. This school had a comfortable faculty lounge, but the nonsmoking group met there, and for all intents or purposes, the faculty lounge was "off limits" to the boiler room crew.

Such structural and functional isolation (to the extent this observation can be generalized) detracts severely from the hopeful picture presented by the small-group research-and-theory orientation that led us to the starting point of this chapter.

CHAPTER THREE

ATTITUDE AND RELATED VARIABLES

The objectives of the phase of this investigation now to be reported relate to the concept of attitude. These objectives are to discover the character of teachers' attitudes and beliefs regarding the importance of instructional film; to determine the effect attitudes have on the frequency of film usage; and to see if attitude is, in general, a useful predictor of the magnitude of other variables important for the design of an information campaign.

Theoretical orientation. A framework within which we have found it easy to talk about attitude, is one labeled "phenomenological." W. I. Thomas elegantly stated the phenomenological argument long ago, when he observed that what a person *believes* to be true *is* true in its consequences for his behavior. Thomas' view may be stated another way: When one's beliefs are not veridical, what one *believes* to be true is what determines one's action, not what *is* true. Indeed, if external forces commanding an unwilled action are barred from consideration, it is safe to say that changed beliefs (or attitudes) *must* precede a change in behavior.

The concept "attitude" is used in a technical sense throughout this chapter. Following Krech and Cruchfield (1948), we define "attitude" as a certain type of belief as follows: If a person is motivated to hold a belief, or if he has an emotional investment in the "object" of the belief, that belief is an attitude. Those beliefs that classify also as attitudes, are beliefs the person *wants* to hold. A person will actively *avoid* a consideration of evidence that challenges that particular category of beliefs which, for him, classify also as attitudes; and for the reason that his image of himself is tied up with those of his beliefs that are also attitudes.

Something of one's self is, then, invested in the objects of one's attitudes. Hence, to say something unflattering about a person's mother, or his God, is to say something unflattering about the person himself. Or at least this is true if, as is usual, the person's mother and God are the objects of beliefs that are also (in this case favorable) attitudes.

Krech and Cruchfield describe beliefs and attitudes as *enduring* cognitive structures. Of course these cognitive structures are only *relatively* enduring. Like all cognitive organizations, both beliefs and attitudes change, however slowly. Attitudes, however, resist change more strongly than do beliefs when contradicted by evidence that should, logically, cause a change. This is seen in the intuitive understanding that is reflected in the sometimes heard comment: "I never argue politics or religion."

The dependence of a successful information campaign upon a knowledge of audience attitudes is, therefore, always high. Both the tactics and the strategy of any campaign depend upon such knowledge, and its lack has caused many an information campaign to "boomerang." (See, for example, Hyman and Sheatsley, 1948).

I. The Relationship Between Attitude and Knowledge

If a person is strongly in favor of something, it is likely, though far from inevitable, that he possesses a good bit of knowledge about that "something." If, on the other hand, he is strongly unfavorable the prediction concerning the degree of knowledge is more doubtful. This is because there are at least two prominent opposed causes for negative attitudes, either of which may be the cause of the negative attitude.

First, the respondent may possess a great deal of knowledge, and in the light of this knowledge judge the object of the attitude to have harmful consequences of some sort. It is unrewarding for him to regard such a "deleterious" object positively. On the other hand, this same attitude may be caused by a *lack* of knowledge. This may be due to a fear of the unknown, or its reciprocal, the "need for meaning." Cantril (1941), has written an essay on this subject, appropriately entitled "The Individual's Pursuit of Meaning." In the essay he points out that a chief characteristic of experience is that it is organized and meaningful, and that when an individual is faced with a puzzling, at first uninterpretable situation, he experiences mild to strong unpleasurable tensions which persist until some organization can be imposed on, or interpretation made, of this novel complex.

For the respondent, whose attitude is assessed as being in the center of an attitude continuum (the "neutral" position), the first presumption is that he has no attitude toward the object under consideration. His view, being neither positive nor negative, would be regarded as a belief but not an attitude as we have defined these terms. If it is known that such a neutral respondent has considerable knowledge of the "attitudinal object," it is safe to assume he deems the object to be of little personal consequence. If this respondent lacks knowledge of the object, this object, while of little importance at the time, is of potential importance, and increased knowledge may actualize this potential.

What circumstances, then, would lead one to predict a positive correlation; and what different circumstances, a negative correlation, between attitude and knowledge? It would certainly be true, in general, that as one's knowledge of an object increased, attitude toward that object would become more positive if the object were perceived as having a reward associated with it, and more negative if the object were perceived as having a punishment associated with it. Attitude would remain unchanged, on the other hand, if the object were perceived as irrelevant to the person's needs, or if it were perceived to have both positive and negative consequences (a balanced approach-avoidance conflict).

Our hypothesis is that there is a positive relationship between knowledge about, and attitude toward, audiovisual materials. This hypothesis, considered in light of the discussion in the preceding paragraph, invites two comments--both of them gratuitous, probably, in the eyes of some readers. First, we believe that the proper use of carefully selected audiovisual materials can enhance learning in unique ways. Secondly, we assume that most teachers wish to be effective teachers. If these two points are granted, the above hypothesis necessarily follows.

Method and results. Using NSF respondents, a sample of 66 "well-trained and well-informed teachers" was compared with a sample of 108 "poorly-trained and poorly-informed teachers" on several measures presumed to be reflective of attitude.[10] The procedure used was first to group all respondents into one of three categories on the basis of the amount and type of audiovisual training that they had received (see question #1, NSF schedule, Appendix B). Also assessed, was the extent to which these respondents had read the printed material about audiovisual resources which had come to their attention (question #4, NSF schedule, Appendix B). It was assumed that teachers who scored "high" on these measures would be relatively more informed about audiovisual materials than would the teachers who obtained low scores. The well-informed and poorly-informed groups were compared on their attitudes toward instructional film and on the extent of their use of film as measured by self reports. The results indicate that the well-informed teachers more than the poorly-informed teachers tended to have positive attitudes toward the utility of instructional film. However, the difference did not reach the usually accepted standard of significance ($.10 > p > .05$, one-tail chi square test). The well-informed teachers also used more films during the preceding school year than did the poorly-informed teachers ($p < .01$, one-tail chi square test). These and other comparisons are summarized in Table 3.1.[11]

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[10] The sub-sample of 174 teachers (66 + 108) was representative of the total sample of 1,400 NSF teachers described in Chapter One.

[11] A second test of the "attitude-information hypothesis" was made. It has been reported elsewhere (Knowlton and Hawes, 1962). In this study the attitudes of teachers taking summer session courses in audiovisual utilization and in graphics were measured. Measures were made at the beginning and at the conclusion of the course work. Post-course scores were significantly higher than pre-course scores ($p = .005$, one-tail test), suggesting that attitudes toward AV were made more positive by taking a course in AV. However, this was a methodological study to compare two attitude measurement procedures, and there was not adequate control to unequivocally support a causal inference. That is, the study was a single group before-and-after study so far as the attitude and information relation is concerned. Therefore, extraneous factors could have caused the result reported.

Table 3.1

Chi Square Values of the Differences Between Well-Informed and Poorly-Informed Teachers on Frequency of Film Usage and Attitude Variables
(NSF Sample)

Item	Chi square	df	p (one-tail)
1. Frequency of film usage (number of films per year)	6.07	1	< .01
2. Frequency of film usage (relative to other teachers in same school.)	16.24	2	.0003
3. Frequency of film usage (relative to other science teachers)	13.02	2	.0005
4. Attitude toward usefulness of instructional film.	1.77	1	< .10

II. The Relationship Between Attitude and Usage

A most obvious hypothesis is that respondents having favorable attitudes toward film will, in general, use film more extensively than will respondents who do not hold such favorable attitudes. This hypothesis, which is reasonable on its face, was supported.

While this was no surprise, we were unprepared to find how highly dependent were both the attitude and usage variables upon the subject-matter area in which a respondent taught. This made manifest the need to examine the dependence of usage upon attitude, separately, within either single subject-matter areas or within closely related subject areas.

The procedure was to examine the total NSF sample for teachers who taught a single subject (in the present case, mathematics or biology), or who taught one or the other or both of two closely related subjects (in this case, physics and chemistry), or who taught "general science." This yielded subsamples as follows: mathematicians, N = 98; biologists, N = 220; physicists and chemists, N = 80; and teachers of general science, N = 100. "Attitude" and "usage" were measured in the way previously described. (See question #4-c and question #2, respectively, on the NSF schedule, Appendix B.)

Several things are clear from an inspection of Figures 3.1, 3.2, and 3.3. First, a very marked degree of skewness can be observed in the frequency distributions of response to both the attitude and usage measures. The respondents bunched up toward the favorable end of the attitude continuum, and toward the low or "infrequent end" of the usage continuum. Also notable are differences in frequency of usage to be found between the four subject-matter areas. Teachers of biology and general science use far more films than do teachers of physics, chemistry, or mathematics.

Although the usage distribution was skewed toward the "infrequent end" of the usage continuum; still, in absolute terms, the number of films used by many of the respondents seemed to us to be too high. Thus, although many respondents reported that they used no films at all (see Figure 3.3), quite a large number reported the use of twenty or more different titles. A few teachers reported figures as high as 50 and 60; and in one case, a respondent reported using an even 100 different titles![12]

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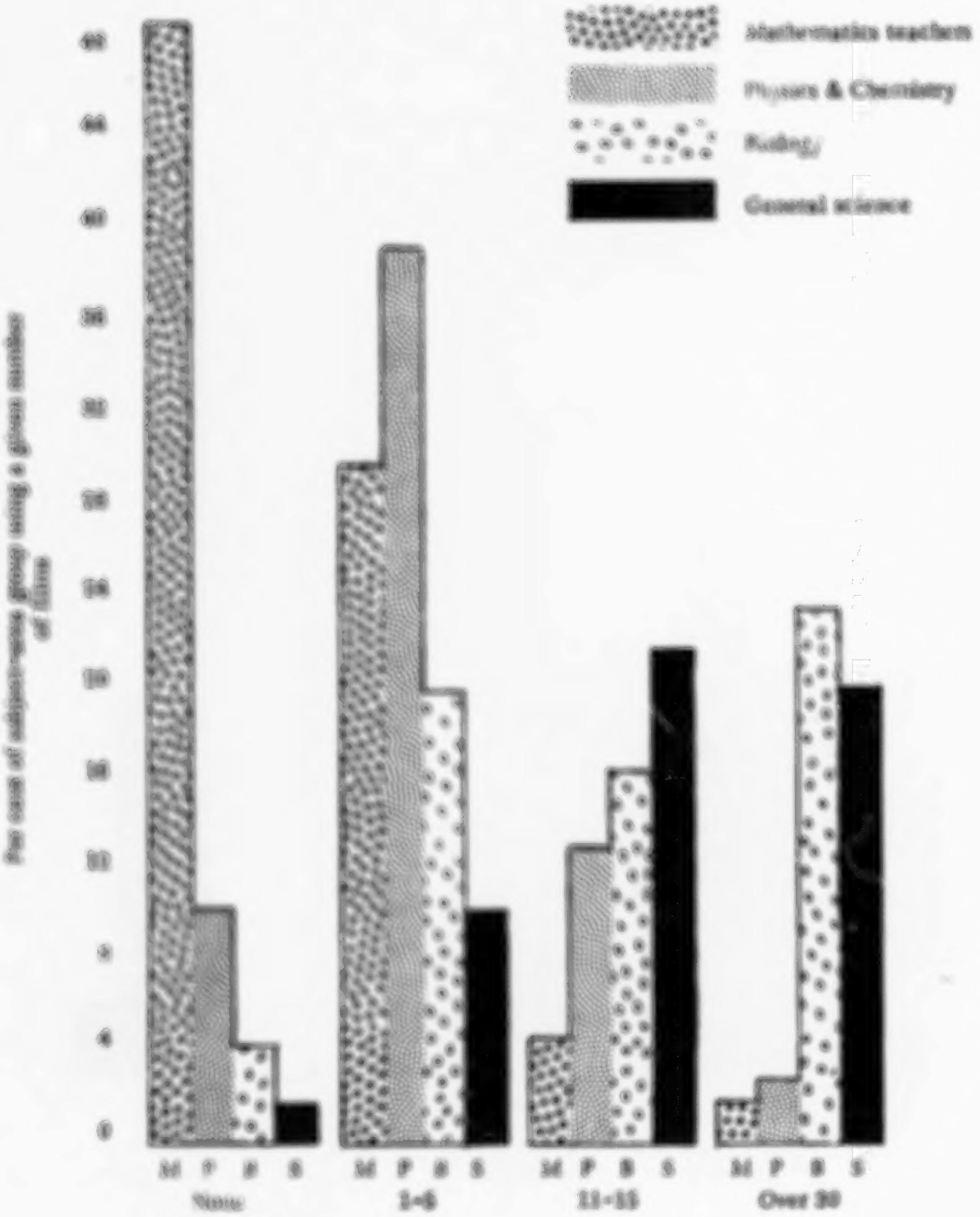
[12] In addition to these very high figures, we wondered about an observed tendency for many respondents to say they had used 10 or 15 or 20 or 25 or 30 or some other number of films that was an exact multiple of five. The respondents so reporting tended to be (1), in the "high usage subject-matter groups" of biology and general science (as opposed to mathematics, chemistry, and physics); (2), to be "very favorable" toward films; and (3), to report high usage figures.

It may have been that these particular respondents did in fact use a large number of films; and that they were, for this reason, less likely than most to remember the exact number used. If so, it would be presumed that they gave estimates; and that in estimating, they evidenced the often observed tendency to estimate to the nearest "round number." This is the familiar tendency to say, for example, "I'll be about five or ten minutes," rather than the (statistically) equally likely four or nine minutes, or six or eleven minutes, etc. It may have been the case, moreover, that multiple showings of the same film were counted.



Number of films shown during the period of one year, as a function of subject taught.

Fig. 3.1 -- Per cent of teachers in four subject-areas showing different numbers of films in one year. (NSF sample).

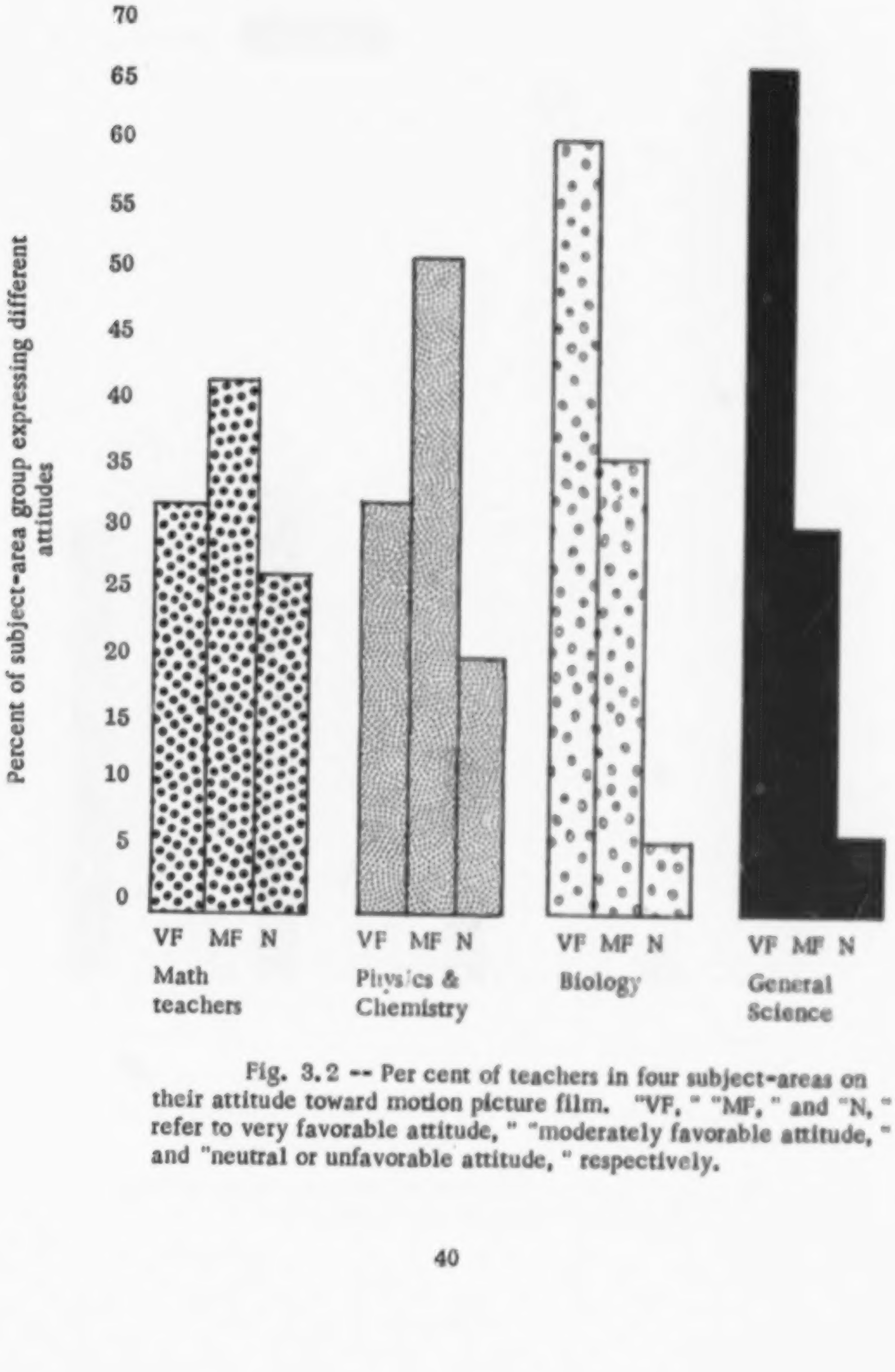


Fig. 3.2 -- Per cent of teachers in four subject-areas on their attitude toward motion picture film. "VF," "MF," and "N," refer to very favorable attitude," "moderately favorable attitude," and "neutral or unfavorable attitude," respectively.

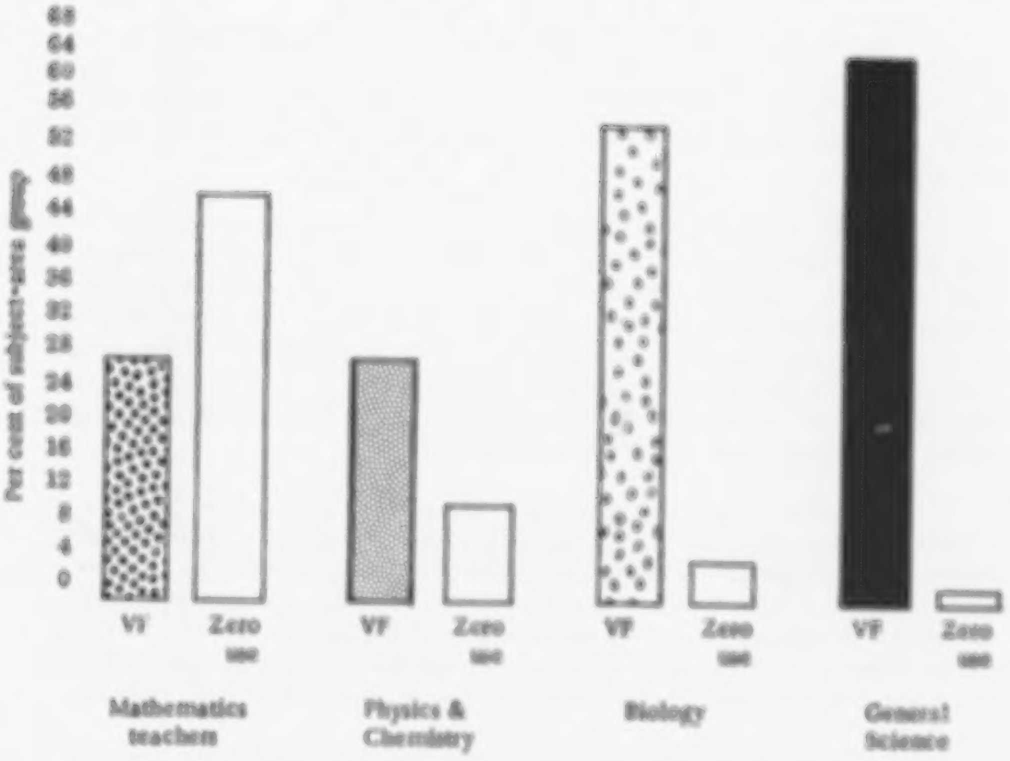


Fig. 3.3 -- Per cent of teachers in each of four subject-areas who had very favorable attitudes toward instructional motion picture film and those who used no films during the period of one school year (NSF sample)

Chi square tests of independence were made to test the statistical significance of the attitude-usage correlation by subject-matter group. Three out of four of these tests were significant at the two per cent level or better (two-tail tests). Significance was not attained for the group of teachers teaching general science. Even in this latter case the direction of the results was as expected, high usage being associated with favorable attitude ($p > .20$, two-tail test).

III. The Effects of a Respondent's Role Upon the Perception of Utilization Deterrents

A central theme guiding the present research is that it is essential to know certain characteristics of one's audience in order to insure the success of an information campaign. In this and the following two sections we consider audience characteristics of three varieties: the formal role played within the school, attitude toward film, and the subject the respondent teaches. In each of these three cases, we examine how an audience characteristic influences the way a teacher perceives obstacles or barriers to the utilization of film.

In this section we ask whether or not a person's role within the school community has any significant effect upon the way he perceives various of the deterrents to the use of film. More specifically, we ask, what are the ways in which teachers, audiovisual coordinators, and principals differ and agree in this respect?

First, we give a brief theoretical accounting which leads to the expectation that school personnel will differ in their perception of a "common problem." One might ask, "Are not the teachers, the audiovisual coordinator, and the principal, who are in the same school, exposed to roughly the same objective facts or problems related to the use of films in their building?" If one were to answer "yes" to this question we would suggest that even though these persons were *exposed* to the same problems, they would still tend, despite some agreement, to *perceive* them differently. Why is this so?

It has become well-established that an individual's perception of an object, event, or an idea is "functionally selective" (Krech and Crutchfield, 1948). This means that what an individual perceives, and how he interprets his perception, is a function of a host of interrelated social and psychological influences — such as his needs, moods, mental set, beliefs, morals, and his cultural frame of reference. As we earlier argued, the way in which a person perceives a given situation determines his course of action in that situation.

To this list of influences which affect an individual's perception of his world, we add the related but distinguishable variable referred to here as *expectations*. Role expectations are attached to each of the many positions that a person occupies in our society — such as teacher, church or club member, mother or father, etc. A person, playing a specific role like that of a teacher, is required to "live up to" certain behavioral expectations ascribed to that role. These expectations differ in some respects from those demanded of a person in a related or counter role, such as a principal or audiovisual coordinator. Hence, all persons associated with a given social system, such as a high school, are expected to heed not only a number of common demands, duties and responsibilities, but also certain unique ones associated with their own specific roles. Because of these differential role expectations and experiences, teachers, principals, and audiovisual coordinators are not likely to be exposed to the same problem within a framework commensurate with their own role obligations.

In short, and despite considerable agreement on many points, persons are expected to differ in their perception or interpretation of an event, idea, object, or problem (1) because of individual variation in the nature of their own needs, attitudes, beliefs, and other such psychological forces; and (2) because of such potent social influences as the unique expectations, duties, responsibilities, etc., required of a person in a specific role.

It will be recalled that the respondents in the NSF sample were attending workshops with the aim of upgrading their teaching performance in the sciences and mathematics. All respondents had taught at least one course in these areas during the preceding school year. Some respondents had also assumed roles other than that of teacher. Thus, we were able to separate a group of principals and assistant principals. These respondents were considered jointly, as principals (_N_ = 63). Likewise, we separated all respondents who had assumed the role of audiovisual coordinator (or supervisor, director, etc.) in their school (_N_ = 66). From the remaining group of teachers, who presumably were neither principals nor audiovisual coordinators, 200 were selected in a random fashion. These role groups were then compared in terms of the responses they gave to a precoded question concerning deterrents to the use of instructional motion picture film. This question asked:

> Among the deterrents to the use of instructional film listed below, which, in your opinion, reduce the use of films among the teachers in your school? For each statement, place a "2" if it is a _major_ deterrent, a "1" if it is a _moderate_ deterrent, and a "0" if it is a deterrent of little or no importance.

8a. Films are regarded as not very important aids to learning.

8b. There is not enough money in the budget for a proper, up-to-date audiovisual program.

8c. Many teachers lack sufficient training in the utilization of film.

8d. The principal or superintendent is opposed or indifferent to the value of films.

8e. Films or equipment are often not available when needed.

8f. Films that are available are usually out-of-date.

8g. Available films don't cover important subject matter.

It is to be noted that the above question asked about deterrents thought by the respondent to block teacher usage *generally*. An open-end question, to be dealt with later, asked about the respondents *personal* experiences in the use of instructional film. This difference is more apparent than real. Typically, in such situations, respondents describe themselves. That is, they attribute their own beliefs to others when they lack any very objective evidence as to the nature of another's beliefs.

Differences in the way the three role groups perceived the major deterrents to film usage were determined in two ways. First, each role group was compared separately with each of the other two role groups on each of the seven deterrent causes listed above. Two role groups were compared on an item, in terms of the number in each group who marked the deterrent as "major," as "moderate," or as "a deterrent of little or no importance." This yielded 21 different 2 x 3 contingency tables. Seven of the 21 resulting chi square tests were significant at the five per cent level or better (two-tail tests).

In the second approach, rather than to compare two role groups at a time, all three role groups were compared. The same deterrent items were used, but teachers giving "major" or "moderate" responses to a deterrent item were combined and compared with those who marked the deterrent as being "of little or no importance." This yielded seven 2 x 3 contingency tables, of which four were significant by chi square test at the five per cent level or better (two-tail tests).

Only two of the seven deterrent items (5-c and 5-d) separated the defined role groups in both of the described approaches. It was no surprise to discover that principals and audiovisual directors, more than teachers, believed that, "Many teachers lack sufficient training in the utilization of film." It may be a surprise, however, that relatively fewer teachers, than was true of either principals or audiovisual directors, believed that, "The principal or superintendent is opposed or indifferent to the value of film." It should be called to the reader's mind, however, that the role group designated as "principals" was composed of all those in the NSF sample who had acted in this capacity, or in the capacity of assistant principal, even if only briefly. Many in this group may have identified themselves more closely with teachers than with administrators. This finding is nevertheless of interest. Still, we are reluctant to try to make very much of it, because the over-all evidence indicating a significant effect for the operation of role expectations upon perception is quite weak.

Responses to the Open-end question. Question #6 of the NSF survey asked:

> In terms of your personal experiences, what kinds of conditions or situations have most discouraged you in the use of instructional film?

The respondents' free responses to this question were content analyzed according to procedures described in Appendix C.

Table 3.3

Deterrents to Film Use As a Function of Role [a]
(NEF sample, open-ended question)

Item	Teachers	Administrators	AV Directors	Total
Poor Film Quality	64 (57.04)[b]	7 (9.05)	8 (12.90)	79
Facilities or Money Lacking	78 (76.54)	12 (12.15)	16 (17.31)	106
Booking Problems	70 (77.98)	13 (12.38)	25 (17.64)	108
Utilization Difficulties	18 (18.77)	3 (2.98)	5 (4.25)	26
Time	22 (21.66)	5 (3.44)	3 (4.90)	30
Total	252	40	57	349

Chi square = 12.270, df = 8, $p < .20$, two-tail test.

[a] Only the respondents' first responses were considered.

[b] Theoretical frequencies are in brackets.

This analysis yielded a large number of reliably codable categories which, for present purposes, were reduced to five in number by combining similar categories. Table 3.2 summarizes these five broad categories and shows, as well, the way in which the three role groups differed in their perceptions of the deterrents to the use of instructional film. Although these groups did not differ significantly, they gave responses which tended to confirm the data from the pre-coded question described above.

Summary Comment. The number of responses made to the open-end question just described--i.e., the number of codable deterrents given by a respondent--varied generally from one to three, with the median being two. In an unreported analysis in which all the responses made by each respondent were counted, statistically significant differences emerged. But to count all responses in a situation where the number of responses per respondent is not constant, is to give uneven weight to the various respondents. Thus in the above reported analysis, only the *first* response given by each respondent was counted. The result fell short of statistical significance.

Recall too, that the answer concerning the effect role expectations have upon perception, as given by the analysis of the precoded question, gave four of seven significant tests when all three role groups were considered at a time. A fifth test was very nearly significant.

We mention this here because we have come to hold the impression that role expectations do exert a noticeable influence upon the way deterrents to the use of instructional film are perceived. We believe, however, that this influence has been masked in the described analyses, by other, yet stronger influences, and we wish to discuss these at a later point.

IV. The Effect of Attitude on the Perception of Deterrents

The respondents in the first study to be reported in this section were selected from (approximately) the first 200 NSF respondents of the nearly 1500 who replied to our request for information. This fact may have introduced a bias into this subsample, although we have no evidence that this was so.

One hundred and thirty-two respondents were selected from these first 200 returns in terms of their responses to attitude item #4-c on the NSF schedule. If, on this attitude item, a respondent classified himself as "very favorable" toward film, he was so regarded and placed in a "favorable attitude" category (N = 81). If he classified himself as "moderately unfavorable" or "very unfavorable," he was so regarded and placed in an "unfavorable attitude" category (N = 51). The members of these two attitude groupings were then compared on their responses to the precoded deterrents item (question #5, NSF schedule). Chi square tests were employed to test for independence, taking one question #5 item at a time. Each of the seven chi square tests was significant at the five per cent level or better (two-tail tests).

We also examined the *pattern* of responses of the two attitude groups *across all deterrent items.* For example, it can be seen in Figure 3.4 that, when "serious deterrent" responses (or "#2" responses) were considered, the favorable attitude group named four of the seven deterrents *more often* than did the

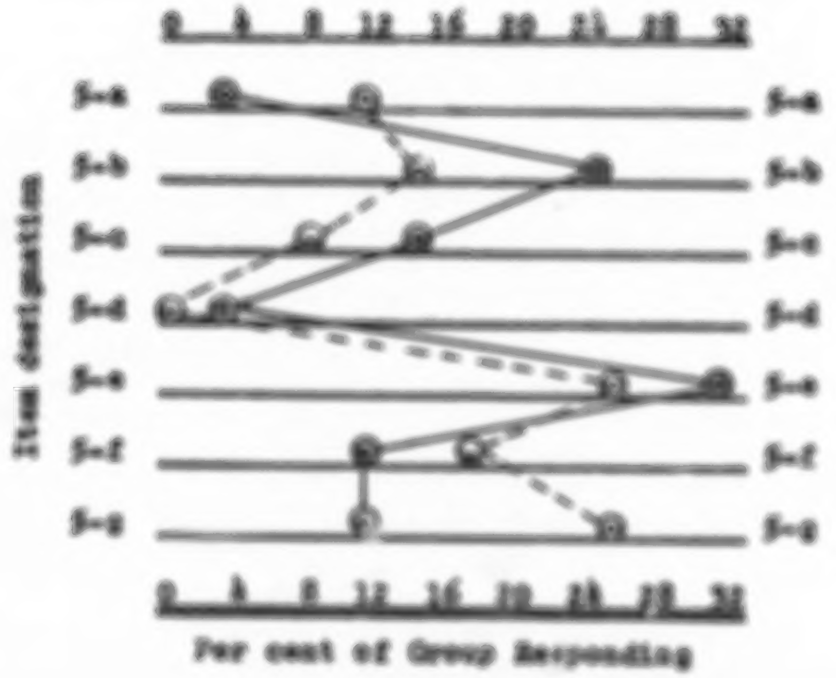


Fig. 3.4 — Pattern of responses of 81 favorable attitude (+), and 51 unfavorable attitude (-) persons to pre-coded "deterrent items" (question # 5, YBF schedule).

unfavorable attitude group, while the opposite was true for the other three items. At first thought one would expect just the opposite. That is, one would expect that the unfavorable attitude group, more than the favorable group, would have named the larger number of deterrents as serious. However, when one looks at the character of the particular deterrents "favored" by the two attitude groups, this finding becomes understandable.

The three deterrents "favored" by the unfavorable attitude group were the three items, and only these three items, that question the instructional worth of films, as such. These items were:

8a. Films are regarded as not very important aids to learning.

8f. Films that are available are usually out-of-date.

8g. Available films don't cover important subject matter.

The favorable attitude group saw, as the greatest deterrent, "availability problems" of film and equipment (item "8e"). The unfavorable attitude group also mentioned this quite frequently. But the item that most separated the two groups was "8g," given above; viz., films don't cover important topics. This item was most mentioned by the unfavorable attitude group.

The open-end question. Question 89 on the NEP schedule, which asked concerning the "...kinds of conditions or situations [that] have most discouraged you in the use of instructional film," gave a clearer and, in some ways, a simpler picture of the differences between the two attitude groups. In this free response situation, the negative attitude person tended frequently to say, simply, that he just didn't have enough time to be showing films. The favorable attitude person almost never said this. This difference was more obvious, by far, than was any other.

Both attitude groups, in this free response situation, were apt to complain of the quality of filmed messages. Above all, both groups tended to complain of booking problems. Whenever differences between the two groups did appear, they tended to fall into two categories: deterrents that were or were not teacher controllable. The unfavorable attitude group tended to name a deterrent that was teacher-controllable (e.g., the previously mentioned factor of time), while the favorable attitude group tended to name deterrents of a sort that were beyond the teacher's control (e.g., films often present much that is neither pertinent nor relevant). (Further discussion of this point can be found in Appendix D.)

V. The Effect of Subject Taught Upon the Perception of Deterrents

In our early deliberations, we were not sufficiently impressed with the strength of the variable "the subject a teacher taught." It turned out that the subject a teacher taught was a better predictor of usage than was the teacher's attitude toward film. It seemed, therefore, that the perception of deterrents to the use of film might also be affected by the subject a teacher taught.

The respondents used in the test of relationship between "subject taught" and the perception of deterrents (question #5, NSF schedule) were the same mathematics and biology teachers previously described, but with supplemented Ns as described below. Mathematics and biology teachers provided our clearest distinction between any pair of available groupings, in light of the demand that the groups compared should, in themselves, be relatively homogeneous.

In previous work with groupings based upon the subject a teacher taught, it proved impossible to get enough biologists-only, chemists-only, etc., to form a statistically workable sample of one-subject-only teachers. Thus, when we had four subject-matter groups, the requirement imposed was that a respondent taught only the subject labelling the category he was assigned to and none of the other three subject categories. He may have taught subjects other than these three. The same rule was applied in the present selection of subjects. As a result of our using only two categories based on subject-taught, it became possible to increase the Ns of these two categories. The N for the mathematicians became 136; and for the biologists, 146.

The procedure was identical to that previously described for the two groupings based on attitude, in the instance where the comparison was in terms of the precoded deterrents item (question #5). In contrast to the finding vis-a-vis attitude, the subject a teacher taught had no differential effect whatsoever in determining the relative "preference" of these two groups for different deterrents. No chi square test approached significance. Indeed, five of the seven chi squares--i.e., for five of the seven deterrents--yielded probability values greater than .50. Not only was there no difference between the subject-matter groups in relative preference for different deterrents, but the mean number of responses made by the two groups was very close. Mathematicians gave slightly more "#2" (or serious deterrent) responses than did the biologists. The means were 1.44 and 1.35 respectively. The biologists, on the other hand, gave slightly more "#1" (or moderate deterrent) responses. These means were 2.22 and 2.06 respectively.

VI. The Non-normative Group

Explanatory preface. A major goal we had hoped to achieve through the NSF study was the development of a more refined and subtle attitude scale than the crude scale contained in question #4-c of the NSF schedule. A sensitive and reliable scale was needed for use with the smaller non-normative group comprised of the Indiana high school teachers described earlier. The self-rating scale used here, did prove adequate to the tasks required of it to this point. However, we had very large Ns in the NSF study and this allowed us, when necessary, to eliminate middle groups and to pay attention to the extremes of the attitude continuum.

Our attempts to get a more refined scale represented perhaps the largest single undertaking of this investigation. Just as we seemed to have solved the methodological difficulties, other evidence that was gathered made us cognizant of a previously unseen problem. The consequence was that we deemed it our most justifiable course of action to depend upon a modified form of scale of the type illustrated by question #4-c on the NSF schedule.

Despite the logical difficulty encountered, the reader may be interested to learn something of the strategy and tactics employed, and something of the results attained. This information is presented in Appendix D. It will be noted that the kind of attitude measurement settled upon here and used in the NSF study was probably as defensible as we could have achieved within what we describe in the concluding chapter as a faulty conceptual structure.

Non-normative Study: Major Hypotheses

1. We had predicted that teacher usage of film would be positively related to teacher attitude and department chairman attitude. It was felt, as before, that attitude and usage would correlate, but in addition, it was believed that the department chairman was in a position to be influential in helping determine both extent of the teacher's use of film and the teacher's attitude toward film. It was believed that a "favorable" department head would have the effect of increasing use of film, and of making attitudes more positive. An "unfavorable" department head would exert an opposite influence.

   To test this, Spearman rank correlation coefficients were run comparing attitude, as measured by the single item attitude scale, with frequency of usage of instructional films. The scores of teachers and department chairmen in mathematics, science, and social science in six high schools provided the data for analysis (N = 99).

   Significant correlations ($p < .02$) were obtained between the extent of teacher usage and favorableness of teacher attitude, and between teacher usage and department chairman usage. Significance was not obtained in any comparison involving the attitude of a department chairman.

2. Next, a Kruskal-Wallis one-way analysis of variance comparing teachers in mathematics, science, and social studies in six high schools, was made in order to determine whether the attitudes of the teachers in the several departments differed. The results were significant ($p < .001$) indicating that at least one department was drawn from a population unlike that of one or both of the other departments. Three Mann-Whitney U tests were also calculated, comparing each department, separately, with each of the other departments. The mathematics teachers differed from the science teachers and the social studies teachers at the .0002 and the .0003 levels of significance respectively. The science and social studies teachers did not significantly differ from one another.

3. A third hypothesis stated that attitudinal variability would differ as between teachers and department chairmen, and that teacher attitude

would vary more in extremeness of opinion than would the attitudes of department chairmen. (*Extremeness* is not to be thought of as in any way independent of *intensity*. See discussion of this topic in Appendix D.)

To test this, teachers were grouped, by department, and the median scores for the three departments (across six schools) was determined. The attitude scores of the department chairmen (from the six schools) were similarly determined. Three Mann-Whitney U-tests, one for each of the three departments, (but, again, across the six schools) were calculated, yielding nonsignificant probabilities ranging from .39 to .47.

VII. Concluding Comment

There is more to be said in later chapters on the subject of attitude in relation to the goals of this investigation. For the moment we wish only to call the reader's attention to some of the findings presented in this chapter.

We asked how different audience characteristics operated to influence the way a teacher perceived deterrents to the use of instructional motion picture film. The formal role a teacher played (i.e., teacher, principal, or AV co-ordinator or director), may have had an effect upon the way deterrents to usage were perceived, although, the evidence on this point was weak. The attitude a teacher held in regard to the instructional utility of film did seem to have an effect. However, the subject a teacher taught was not correlated with the manner in which deterrents to the use of film were perceived, even though the subject a teacher taught had a great deal to do with the frequency with which that teacher used film. Moreover, no differences in attitude were found to be dependent upon role.

Finally, while teacher attitude and teacher usage correlate significantly, and department chairman usage and the usage of teachers in a given chairman's department correlate significantly, still, department chairman attitude did not enter significantly into any comparison in which this variable was involved.

At first thought, each of these findings seems at least a little contradictory of at least one other of these findings. However, let us propose that the most important variable among those mentioned is the subject a teacher teaches. And, let us remember that department heads teach in the same subject matter area as do the teachers in his department. If we accept this as a working assumption, most, if not all, of the seeming contradictions reported above begin to resolve themselves. As noted, it is our intention here only to underscore some points for later consideration, so that the reader may better keep them in mind.

CHAPTER FOUR

COGNITIVE DISSONANCE

In this portion of our study, we examine some of the consequences of a perceived discrepancy between a teacher's attitude concerning the instructional value of film, and his actual behavior in regard to the frequency with which he uses instructional film in the classroom. If a teacher believes film is valuable and should be used, yet he doesn't use it, his perception of this fact is thought to be discomforting. Discomfort, so caused, is referred to as cognitive dissonance.

The theoretical notion guiding this portion of our study has found wide application to social psychological problems. While illustrations may be made on several levels, the thinking of Festinger (1957) is the most developed. Festinger notes that man has a strong tendency to be consistent. He is uncomfortable, experiences tensions, when this consistency is lacking. Thus, to use one of Festinger's examples, if a man has the attitude that smoking is harmful to his health and yet he smokes, this fact troubles him. He experiences cognitive dissonance, usually referred to simply as dissonance. In terms of a general tension-reduction hypothesis, it is expected that such a person will behave so as to reduce or eliminate dissonance; or, stated otherwise, achieve consonance. He may, to continue the above example, change his attitude about smoking or he may stop smoking. For instance, he may become unusually vulnerable to the appeals of filter cigarette "ads," and come to believe that smoking filter cigarettes protects his health. This belief would cause dissonance to decrease or even to disappear.

Similarly, if a teacher were to experience dissonance because he failed to utilize films as much as he believed he should, we would expect him to employ rationalization, projection, or some other "defense mechanism" to reduce this "dissonance-produced" tension.

Logically, if not psychologically, four distinct classifications result when the two variables used to define dissonance are dichotomized. The two variables are (1) attitude concerning the instructional value of motion picture film; and (2) the extent to which film is used.[13]

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[13] Our procedure for defining dissonance and consonance on a group level, operationalized dissonance differently than has Festinger. And it is not wholly congenial to his theory. This is because dissonance for Festinger refers to intra-individual conflict--something group procedures cannot hope to measure.

On the other hand there is an easily visible analogy between what Festinger has done on the individual level and the thing we have done on the level of the group. The value of our generalization of Festinger's position is therefore to be construed as solely heuristic.

		Attitude Toward Film	
		Favorable (+)	Unfavorable (-)
Extent of Use of Film	Frequent (+)	Positive Consonant Group "A" (++)	Negative Dissonant Group "C" (-+)
	Not Frequent (-)	Positive Dissonant Group "B" (+-)	Negative Consonant Group "D" (--)

Fig. 4.1 -- Four theoretically possible classifications derived from dissonance theory.

These classifications are illustrated in Figure 4.1 where two consonant and two dissonant groups are shown. The "positive-consonant" and "negative-consonant" categories comprise persons whose behavior reflects their attitude. If his attitude is favorable toward film, the consonant person uses film; if unfavorable, he does not.

As noted, a dissonant person experiences a conflict between his attitude and his attitude-relevant behavior. The positive-dissonant type, who has already been discussed, is an intuitively understandable type, because most of us have been in his shoes. ("It's a good idea but it's too much bother," summarizes a positive-dissonant position.) But why, in the case of the present study, would a person display negative-dissonant behavior? Why, that is, would one who doesn't believe films are useful, nevertheless go to the trouble of using them?

In our early theoretical deliberations upon the dissonance construct, we made no room for a negative-dissonant group, but such a group "turned up." It was small ($N = 18$). Several reasonable explanations can be given for this finding. The negative-dissonant group may have used films because they were told to use them by someone they dared not disobey. They may have been a generally cynical and hypercritical group, and their attitude toward film may simply have reflected a sort of generalized negativity. They may have falsified their responses. Although this group was theoretically uninteresting it was carried along in all analyses for the accidental value such a procedure sometimes has. Interest, however, centered upon the positive-dissonant person, and upon the differences between the positive-dissonant person, and consonant persons (both positive and negative).

We speak of "dissonant persons" or "dissonant groups." This is a matter of convenience. To be accurate, the first phrase should be rendered as "dissonant persons or persons who have had a history of dissonance, but whose dissonance has been resolved in some way." And the second phrase, "dissonant group," should be rendered as "groups of persons, many of whom--though not all--are presently experiencing dissonance or who have had a history of dissonance but whose dissonance has been resolved in some way."

It is very unlikely that a positive-attitude teacher would have been unable, in some degree to resolve dissonance arising because of his infrequent use of instructional film or other conventional audiovisual device or material. We, in fact, tested our method of selection of dissonant persons by looking for precisely that form of behavior that (1) revealed that dissonance likely existed in the past; but (2) was a form of behavior that was motivated because it was, in fact, dissonance reducing. These behaviors were, loosely, the "defensive mechanisms."

It will shorten the presentation to indicate at the outset that no clear evidence of dissonance was uncovered. We are, in fact, quite convinced that there was no sizeable group of dissonant teachers--i.e., one large enough for statistical treatment. But in reaching this conclusion, we tried a number of different procedures for isolating a possible dissonant group, and thereby discovered some things worth reporting. [14]

I. The NSF Studies

In the National Science Foundation (NSF) study, the teachers were asked to indicate how many films (different titles) they had shown their classes in the previous school year. They were also asked to place themselves in one of five attitude categories, ranging from "very favorable" to "very unfavorable," as regards the instructional usefulness of motion picture film. Where attitude and usage did not "agree" (e.g., attitude was favorable but usage was infrequent), dissonance was suspected.

The teachers were therefore separated in the manner indicated in Figure 4.1, where the consonant groups--positive attitude coupled with high usage and negative attitude coupled with low usage--are designated as, respectively, the A and D groups. The dissonant groups--positive attitude coupled with low usage and negative attitude coupled with high usage--are designated, respectively, the B and C groups.

To test the hypothesis that the positive attitude-low usage group would utilize a defensive mechanism such as "projection" in order to reduce dissonance, the NSF teachers were asked the following questions: (see questions #3-a and #3-b, NSF schedule, Appendix B)

3 (a) To the best of your knowledge, would you say that you used films more, less, or about the same as other teachers in your school?

☐ More; ☐ Less; ☐ About the same?

3 (b) Similarly, would you say that you used films more, less, or about the same as other science teachers?

☐ More; ☐ Less; ☐ About the same?

It was expected that dissonant Group B, though they used films relatively infrequently, according to their own report, would nevertheless perceive and remember selectively to a greater extent than would consonant teachers who presumably had little need to "project" in this area of their life. The result of the dissonant group's expected tendency to perceive and remember selectively would reflect itself, it was anticipated, in their *over*-estimating the extent of their use of films relative to "other teachers" and "other science teachers" in their school. Thus some *X* per cent of the consonant-positive group would state that they used film *more often* than the other teachers in their school. It was predicted that whatever this *X* per cent turned out to be, the Group B (dissonant) members would give estimates that averaged this high--i. e., *X* per cent--or higher, even though their actual reported usage was *lower* than was true for Group A. Group D, the consonant-negative group, was expected to estimate, relatively accurately, that they used *fewer* films than most of the teachers in their school. Because there was no theoretical basis for so doing, no predictions were made for Group C, the negative-dissonant group.

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[14] Trying to discover a positive-dissonant group proved an elusive undertaking. Many more analyses were made than were worth the space required to report them. The results were nearly always negative in an unenlightening way. One analysis provided a partial exception to this last statement, and it is reported. Other analyses are reported if they tended to show the development of our thought on the general problem of this research project.

The positive-consonant group (Group A) collectively judged itself to use more films and the negative-consonant group (Group D), judged itself to use fewer films than they felt, respectively, was true of the other teachers in their schools (question #3-a). This accords with the "facts, " as inferred from self-reports, and also with expectations. However, the main prediction was *not* confirmed. The dissonant groups fell between the two consonant groups. The positive-dissonant group did not judge itself to be as frequent or more frequent users, relative to other teachers, to the same degree as did the positive-consonant group. Nor did they judge themselves to be as infrequent users of film as did the negative-consonant group. Findings on this problem as tested against question #3-b were also negative. [15]

These findings may indicate that dissonance did not exist on a large enough scale to be of any consequence, or it may indicate that the measures used were too crude.

These same dissonant-consonant groups were next compared on an item in which they were asked to indicate their opinions as to the relative seriousness of seven commonly encountered deterrents to the use of films among teachers in their school (question #5, NSF schedule). They were asked to mark with a "2" those deterrents which were strong, to mark with a "1" those which were moderate, and to mark with a "0" those deterrents which were of little or no importance. Corresponding values ("2", "1", or "0") were assigned to the responses made, and this yielded a *total deterrents score.* The breakdown of the number of teachers in each attitude-usage group making "2" responses and the mean number of responses for the four groups is given in Table 4. 1. The purpose in asking the respondents to indicate which deterrents reduced the film usage of *other* teachers (rather than their own), was prompted by the generally accepted idea that individuals are more likely to project their own views into a situation for which they lack readily available objective information. This often enables

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[15] Question 3-b here, and in all analyses, proved less sensitive as a measure of "projection" than did question 3-a. No doubt this reflects the fact that teachers had a more objective basis for responding to question 3-b than to 3-a because in the former case they, as science teachers, were predicting for other science teachers, whereas in question 3-a they were required to predict for all teachers in their school.

Table 4.1

Number of Teachers in Each Attitude-Usage Group Who Made, Respectively, Zero Through Six "Serious Deterrent" Responses to Question #5 (NSF sample)

Number of[a] Responses	Group A, Positive Attitude-High Usage n = 195	Group B, Positive Attitude-Low Usage n = 147	Group C, Negative Attitude-High Usage n = 18	Group D, Negative Attitude-Low Usage n = 64	Sum
0	42	14	5	14	75
1	64	29	3	12	108
2	44	50	2	20	116
3	26	32	3	14	75
4	15	17	4	3	39
5	3	2	0	0	5
6	1	3	1	1	6
Means	1.59	2.18	2.11	1.75	N = 424

[a] The number of responses are the number of "serious deterrent," or "#2" responses, except in the case of item 5-a. Both "serious deterrent" (or "#2" responses), and "moderate deterrent" (or "#1" responses) were counted in the case of item 5-a, because there were too few "#2" responses given to this item to be able to treat it statistically unless this had been done.

an investigator to obtain information that a respondent might otherwise feel reticent about giving.

When the number of responses to the deterrent items was broken down by attitude-usage groupings, a rather noticeable difference was seen between the mean number of responses given by the members of the four "dissonant-consonant" groups. A Kruskall-Wallis one-way analysis of variance (Siegel, 1956) was run to compare these groups on the number of responses made per person. A significant difference was found ($\underline{p} < .001$). Table 4.1 shows that the greatest difference was between the positive-consonant (positive attitude-high usage and the positive-dissonant (positive attitude-low usage) groups. The positive-consonant teachers mentioned the fewest number of deterrents while the positive-dissonant teachers mentioned the greatest number. These data might be taken to suggest that the positive-dissonant group, in order to excuse its low usage, perceived more deterrents to usage than would ordinarily be expected. Or, as we later came to suspect, it may have been that the "positive dissonant" group was not, in truth, dissonant! Other evidence suggests that these group members may indeed have encountered many deterrents in trying to use film; while "consonant-negative" persons, in using films less, would not be thus frustrated. This latter group would not encounter as many utilization difficulties, for the not-so-very-strange reason that such difficulties are the special plague of the "utilizer."

To get a clearer picture of how the four consonant-dissonant groups replied to the precoded deterrents question #5, an analysis of the different responses of the four groups to the six deterrent items was undertaken.[16]

On the basis of chi square tests of independence, it was found defensible to reject the hypothesis that the groups were from the same population, for all deterrent items but one, ($p < .05$, two-tail tests). The exceptional item was item #5-a which states; "Films are regarded as not very important aids to learning."[17]

These findings, so far as they go, are what was expected when we earlier believed we had defined a positive-dissonant group. But, since our suspicions had been aroused, caution dictated a closer look at these data. This "closer look" is within the reader's-eye view in Figure 4.2, where a number of insightful qualitative interpretations can be made from the quantitative data presented there.

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[16] In previous analyses of this question, seven items were included. Item 5-d, "The principal or superintendent is opposed or indifferent to the value of films," was dropped here because of the small number of responses to this item.

[17] The four consonant-dissonant groups did not respond differently enough to this item to achieve statistical significance. As it turned out, this particular deterrent was so infrequently mentioned we doubted, at first, that we could use it. However, #2 responses (indicating a "major deterrent") were used in scoring all deterrent items except 5-a. By counting both #2 and #1 (moderate deterrent) responses, in the case of deterrent 5-a, this item was salvaged.

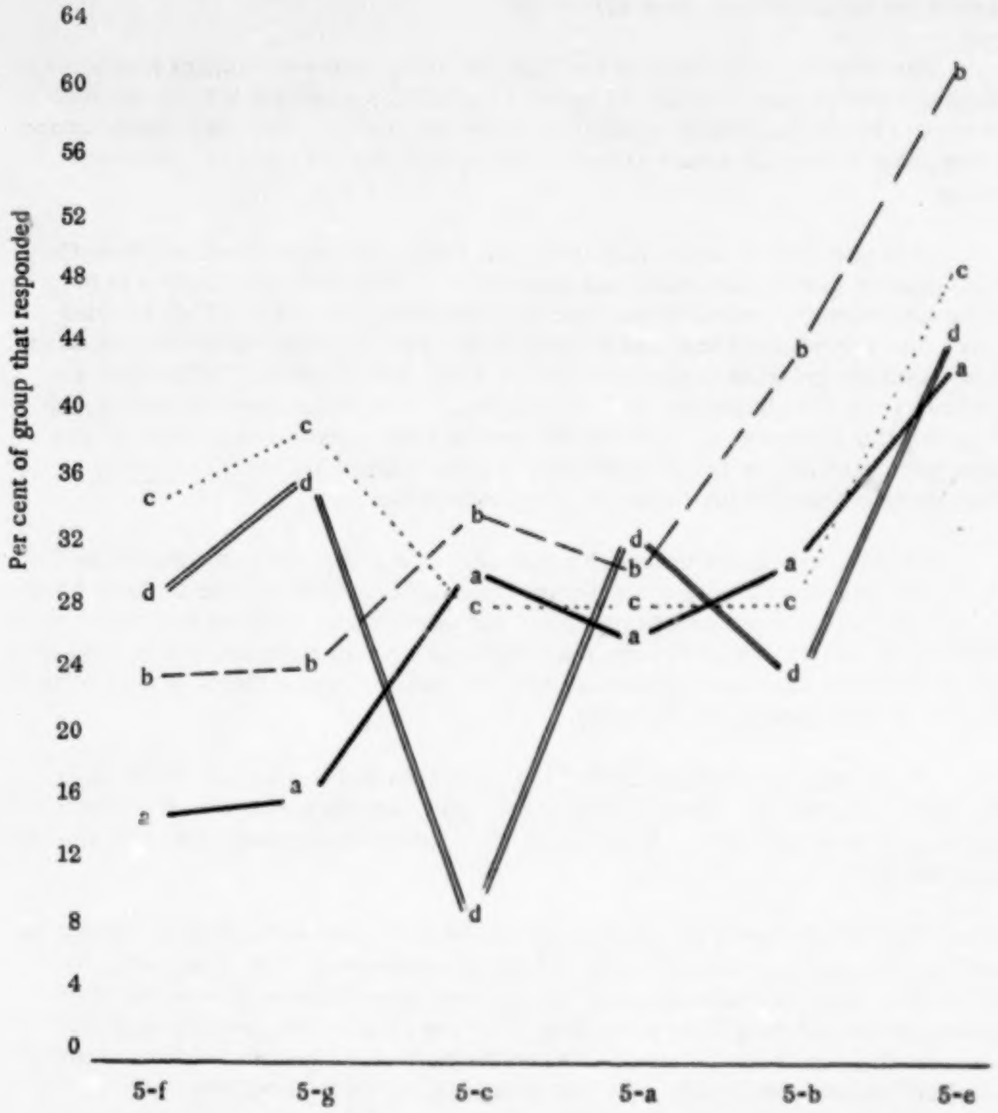

Fig. 4.2 -- Per cent of each of four consonant-dissonant groupings who responded to each of six deterrent items (question #5, NSF schedule).

The "a" "b" "c" and "d" designations stand, in order, for the following groups: positive-consonant; positive-disonant; negative-disonant; and negative-consonant.

Most notable, as concerns our doubts about the meaningfulness of the group designated "positive-dissonant," is the obvious parallelism noted to exist between this group and the positive-consonant group. The dissonant group--which we expected to be so very different from the latter, or favorable attitude-frequent usage group--was in one respect surprisingly similar to it. This was in respect to the relative preference shown by these two groups for the various deterrents to film usage that were listed. These two groups agreed perfectly in the way they ranked the seriousness of these deterrents.

But equally as noteable as the fact that the positive-consonant and positive-dissonant groups were similar in respect to relative preference is their difference in respect to the magnitude of their absolute judgments. The positive-dissonant group judged every deterrent as more serious than did the positive-consonant group.

It should also be noted that there was fairly good agreement between the two negative groups (dissonant and consonant). This latter similarity was not so striking though, and there was one very interesting reversal. This reversal shows that the negative-consonant group responded less frequently than the negative-dissonant group to every item except #5-a, which stated, "Films are regarded as not very important aids to learning." The negative-consonant group regarded this deterrent as more serious than did the negative-dissonant (or any other)group; while the negative-dissonant group judged *all other deterrents* as more serious than did the negative-consonant group.

Further, as regards these same two negative groups, it is of interest that the consonant persons were most distant from the dissonant persons on item #5-c quoted above. The consonant group did not subscribe to the idea that teachers might lack utilization skills (less than eight per cent thought so), while a number of negative dissonant persons did believe that this was a major deterrent to the use of film (nearly 28 per cent).

More than one interpretation fits this qualitative description of the data in Figure 4.2; but one interpretation stands out. Or more exactly, it seemed this way to us at the time. In any case, this interpretation suggested the analysis reported next.

Our interpretation of the data presented in Figure 4.2 is that the group we had labeled positive-dissonant was not in fact dissonant. This group was, by definition, from the same positive attitude universe as the positive-consonant group, while differing from it in using film less often. Our growing suspicion was that this less frequent use of film on the part of the positive-dissonant group resulted because the members of this group did, in fact, meet more utilization obstacles than was true for the positive-consonant group. Our interpretation is that the positive-dissonant group valued film and therefore tried to use it, but that they were frequently frustrated in the attempt. The negative-consonant group, in not valuing film, and in not trying to use it often, if at all, simply lacked the same range of possibilities as the positive-dissonant group, for encountering utilization obstacles. (Which is to say that a man is not frustrated by a late train if he has no intention of catching it.)

This alternative explanation for the differences noted between the positive-consonant and positive-dissonant groups turned out to be amenable to test. Several pieces of information collected by means of the NSF schedule were seen to be measures that should, at least theoretically, correlate with a measure of the difficulties a teacher encounters in using film. The measure in our possession that we thought stood the best chance of indirectly measuring utilization difficulties was *geographical location.*

Our reasoning in support of this choice was as follows. States can be ranked according to the dollar amount spent per pupil for public education. It was felt that there must be a correlation between the total amount spent for education and the amount spent for AV facilities. If the budget for films and equipment is low, teachers will be faced with greater difficulties in their attempts to use films than will be the case where the budget is less limited.

Each person in the respondent grouping labeled positive-consonant or positive-dissonant was therefore classified in one of four categories, depending upon the expenditure for education made by the state in which he taught.[18] The prediction was that persons labeled positive-dissonant would more often come from economically impoverished states than would persons labeled positive-consonant. These data, analyzed by means of a chi square test of independence, supported this prediction ($p < .001$).

Granting that this was an extremely rough measure of the magnitude of the external hindrances to the use of film encountered by these NSF respondents, it is nevertheless a measure that has high face validity. Apparently, factors external to the teacher can better explain the observed differences between the so-called positive-consonant and positive-dissonant groups than can the earlier presumed effects of dissonance.

A second approach to the detection of dissonance: NSF sample. The discovery of a source of contamination in our selection of presumed-to-be-dissonant teachers told us that tests for dissonance would be more sensitive if they involved persons in a limited usage range. Logically, too, it seemed correct to narrow the usage range simply because physical-budgetary factors, the subject taught, etc., are very clearly important determinants of usage and likely to contaminate dissonance measures.

Attitude is, by definition, an essential component in the measurement of dissonance; and one of the ways we measured attitude lent itself to what we deemed to be a more sensitive measure of dissonance than we had previously used. The attitude measure referred to took a three-part form. The teacher-respondent was asked to estimate attitudes toward the instructional value of motion picture films for (a) *other teachers* in his school; (b) *other science teachers* in his school; and (c) *himself.* (Part "c, " estimate of own attitude, is the question, #4-c, previously described.)

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[18] The classification of the positive-consonant and positive-dissonant teachers according to state expenditures for public schools was made on a "per pupil in average daily attendance" basis for 1961-1962. This information was supplied by the *NEA Research Bulletin*, Volume 40, No. 1, Feb., 1962.

The teacher's estimate of his own attitude *in relation to his estimate of the attitudes of others* provided the approximation measure of dissonance that we hoped might be more sensitive than the measure previously used. This requires explanation.

The subjective experience of pain associated with touching a hot stove produces behavior which eliminates the painful stimulus. The subjective experience of dissonance is more than a little similar. Feelings of dissonance produce rationalizing, projective, and other kinds of defensive behavior, because to do so is to reduce dissonance. Therefore, when behavior that *has the potential* for reducing dissonance is observed, the possibility of a history of dissonance is greater than would otherwise be the case.

Teachers' estimates of other teachers' attitudes would seem, on the face of it, to lack any very objective basis. If this is true, such judgments will reflect motivational dynamics of one sort or another. Those proposed here are grouped as (a) *assimilative projection,* and (b) *clinical projection.* Assimilative projection refers to the tendency to see in others characteristics of one's own personality when these characteristics are favorable or neutral, but not unfavorable, and when no objective basis for judgment is at hand. Clinical projection refers to the tendency to see in others unfavorable characteristics which one denies that he himself possesses, but which one does in fact possess. This latter may be the case whether or not objective bases for judgment are at hand.

Thus, theoretically, assimilative projection is *not* dissonance reducing, while clinical projection may be.

On these bases, the following revised procedure for selecting "consonant" and "dissonant" groups was employed:[19]

1. All "assimilative projectors, " defined as persons judging others as having the *same* attitude as they themselves hold, were removed from the analysis.
2. Those not removed were broken down into three subgroups depending upon the number of films they had used during the past year. One group was formed of those who had used from zero to eleven films; a second group had used from 12 to 23 films; and a third group had used 24 or more films.
3. The persons within each usage group were separated into (a) those judging themselves as having a more positive attitude than other teachers and (or) other science teachers; and (b) those who did not. Group (a) was labeled "dissonant, " and group (b), "consonant. "

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[19] The quotation marks around "consonant" and "dissonant" are intended to indicate some doubt about the legitimacy of our interpretation.

The consonant and dissonant group members were separately grouped according to three "usage ranges" (paragraph two). They were then further subdivided according to each group member's response to the "projection measure" described in the early part of this chapter. This was question #3-a (NSF schedule), which asked:

> To the best of your knowledge, would you say that you used films more, less, or about the same as other teachers in your school?
>
> ☐ More; ☐ Less; ☐ About the same.

The dissonant teacher was predicted either to underestimate his colleagues' frequency of film use, to overestimate his own frequency relative to that of his colleagues, or both.

Contingency tables were generated from these data. Each table represented a different usage range. The supposed consonant-dissonant variable was dichotomized and represented along one margin, and the respondents' response to the projection question was represented along the other margin. In this last, the response of "more" was ranged against the responses "same" and "less."

Chi square tests compared consonant and dissonant teachers in terms of the tendency to "project." Significance was obtained in the 0-11 usage range ($p < .001$, 2-tail test), and in the 12-23 usage range ($p < .01$, 2 tail test), but not in the range of 24 or more films shown ($.50 > p > .30$, 2-tail test). In both cases where a significant difference was found, the difference was in the expected direction. That is, the dissonant teachers tended to say that they used more films than other teachers, while the consonant teachers tended to indicate that they used fewer films than other teachers. This is weak evidence suggesting that the teachers here labeled dissonant might, indeed, be dissonant.

II. The Non-normative Study

The respondents from the six Indiana high schools were asked how many different films they had shown their classes in the preceding semester. Later in the interview they were asked how useful for their teaching were educational motion pictures. They responded by marking a single-item attitude continuum. Dissonance was expected to exist whenever a teacher's attitude and usage scores failed to "agree." If a teacher, relative to other teachers, indicated he held a very favorable attitude toward film, and if this same teacher, relative to other teachers, never or rarely used film, then this teacher was thought likely to have had a history of dissonance.

The second step was to seek evidence of dissonance-reducing behavior. "Projection" was sought in the case of the NSF study, and "rationalizing" behavior was chosen for the present study. The attempt to measure rationalizing behavior was made by means of a device suggested by the NSF study and reported in the previous chapter. (Also, see Appendix D.) This was the discovery of a tendency in the NSF respondents, in responding to an open-end question asking them to describe conditions and situations discouraging them in the use of film, to reply in one or the other of two fairly distinctive ways. One way was to name deterrents to film usage that were of a sort beyond the control of the teacher. The other was to mention teacher-controllable deterrents. While the mention of a teacher-controllable deterrent *suggests* rationalization, it is by no means clear that mention of a nonteacher-controllable deterrent *does not* do so. We have only the "empirical suggestion" given us by the NSF data.

The deterrent items that were used were the eight items of the eight-item attitude scale described in Appendix D. This scale consists of four "teacher-controllable" and four "nonteacher-controllable" items presented to the respondent in an alternating order.

Attitude scores for the Alpha and Beta teachers on the single-item attitude scale were separated at the median into categories labeled "positive" and "negative." Usage scores were also dichotomized. However, thirty-three teachers who scored closely about the median on attitude and who were also low on usage were eliminated. This represented an attempt to "purify" what would emerge as the dissonant group. This gave an N of 101 teachers that were categorized as follows: (a) positive-consonant, $N = 31$; (b) negative-consonant, $N = 33$; (c) positive-dissonant, $N = 20$; and (d), negative-dissonant, $N = 17$.

Next, a difference score for each of these teachers was determined by subtracting the score a respondent earned on the teacher-controllable items from his score on the noncontrollable items. It was predicted that the positive-consonant group would be comprised of teachers who, more than was true of the positive-dissonant group, would score lower on teacher-controllable items than on *noncontrollable items.*

It turned out that both groups judged nonteacher-controllable deterrents as the more serious deterrents; but this was more true of the positive-consonant group than it was of the positive-dissonant group. The number of respondents scoring lower on teacher-controllable items than on noncontrollable items for the positive-consonant group was 24 vs. 7; and for the positive-dissonant group it was 12 vs. 8. These results, although in the predicted direction, failed to reach the usually accepted level of significance ($.10 > p > .05$, one-tail chi square test).

III. Summary Comment

When a simple uncomplicated approach to the measurement of dissonance was undertaken, no evidence of dissonance was forthcoming. When more complicated procedures were employed, in the belief that the simple procedures were insufficiently refined, a "suggestion of dissonance" appeared.

We now believe that the introduction of complications into the procedures employed for operationalizing dissonance may have introduced artifacts into the situation.

In one NSF study, evidence of dissonance was lacking until an increased degree of homogeneity was attained in subsamples of the NSF dissonant and consonant groups by the process of restricting the (film) usage range of the respondents assigned to a given contingency table. We know that this had the effect of "homogenizing" in terms of the range of different subjects taught by the teachers thus assigned to each of the three subgroupings used in the analysis. for the reason that frequency of usage correlates with the subject a teacher teaches.

Evidence was presented in another NSF study showing tnat the group originally selected as being positive-dissonant--in the case where usage range was *not* narrowed--was not, in fact, dissonant. Rather, there was at least moderate assurance that this so-called positive-dissonant group was categorized as such because it comprised those teachers who would have liked to use more films than they did, but who could not do so because of deterrents that were beyond their control. That is, they could not do so because of the existence of utilization barriers that were, more than usually, impermeable. In short, the classification of these particular teachers as dissonant apparently was because their schools could not afford an adequate film program. They tended beyond chance expectation to have come from school systems that were, financially, on the bottom of the heap--school systems that, presumably, averaged smaller AV budgets than typical of the national sample of high schools.

In the non-normative study, evidence of dissonance was again lacking; but, even so, the results were fairly nearly significant ($.10 > \underline{p} > .05$), and this even though the *Ns* were small. Moreover, the procedure there used to operationalize dissonance, was relatively straightforward.

Let us assume that these results are not merely chance in their direction, therefore, and ponder whether or not this finding too might be due to an artifact.

A first point is this. When usage range was restricted in the NSF study, dissonance seemed to appear; but the usage range in the non-normative study was relatively narrow to begin with. Why, then, was there not stronger evidence of dissonance in the non-normative study? The answer appears to be that in the non-normative study there was, as a source of variation, "subject taught," and in a stronger degree than was present in the NSF studies. Whereas, in the NSF sample the subjects a teacher had taught were largely limited to four--i.e., mathematics, physics, chemistry, and biology—the range of subjects taught by the teachers in the non-normative sample covered the whole high school curriculum. (This was true even though, in the latter case, we held most interest for teachers of mathematics and science.)

In the non-normative study, the so called positive-dissonant group was comprised of a high percentage of teachers of English (about 1/3 of all teachers of English interviewed.) In this connection it is worth noting that there are more useful films for English literature than for grammar. Thus, a teacher of English might have a positive attitude toward films because they are useful, say, in discussing the Shakespearean stage; but that teacher's usage score might be low because he had used few or no films in his grammar sections. (One teacher of English did, in fact, volunteer just this description of her own performance.)

The non-normative positive-dissonant group also contained four teachers of music. This is a small number, but it represents half the music teachers interviewed. (Could something similar to what was suggested for English, be also involved here?)

Twenty-three of 31 mathematics teachers were in the negative-consonant group, while only one was in the positive-consonant group. In pondering this, one should consider that the character of the concepts a mathematics teacher deals with, viewed in light of the special strengths and weaknesses of the film medium, might readily result in mathematicians being less avid film fans than, say, teachers of science. And as if to prove this, 10 of 20 science teachers were in the positive-consonant group, while none of them were in the negative-consonant group.

In short, we are suggesting that in the non-normative study any "evidence" of dissonance that appeared was an artifact of the variable, "subject taught." Indeed, we believe that it is generally true that factors external to the teacher better explain observed differences between so-called positive-consonant and positive-dissonant groupings than can the earlier presumed effects of dissonance.

* * * * *

We would conclude with a tentative, partly speculative, summarizing statement--one based upon this and upon the two preceding chapters. It has been a growing conviction of ours that most teachers do not hold strong attitudes toward the instructional value of the film medium as a communications vehicle. Not, at least, in the technical sense of "attitude" conceived as a motivationally based belief. The film vehicle, like print, is valued, but it is also taken for granted. This seems not to be true, however, of the film message which, like a good book, may be a rare thing in some areas of thought.

Important determinants of the extent of a teacher's use of film are the subject the teacher teaches and, within narrow subject-matter areas, the extent to which booking and other related utilization problems place barriers to usage.

The first mentioned determinant--i.e., the subject a teacher teaches--has been commented upon previously. This notion is further confirmed in the present chapter in a small way, in the sense that "subject taught" seemed, impressionistically, the most likely artifact that could account for the assignment of a teacher to one or another of the dissonance groupings.

The second mentioned determinant--i.e., booking problems and other related utilization barriers--were noted in the previous chapter as the kind of response given most frequently by the NSF respondents when asked in an open-end question to state the most inportant deterrents to their use of film. (See also, Appendix C.) We did not make much of these findings at the time they were introduced, at least in any ways relevant to our present purpose. This was because we originally believed that this information would be of primary use in building an attitude scale. We believed that the responses given to the open-end question would, in noticeable degree, reflect attitudinal (or motivational) dynamics, and that, therefore, they would not likely be very useful for the objective assessment of existing deterrents. This early judgment was partly vindicated--most noticeably as evidenced in the deterrent response "too little time to be showing films," and in other responses which we came to call teacher-controllable deterrents. However, with additional analyses, it became clear that deterrents related to booking problems were most apt to be mentioned by the frequent user, and the user who taught subjects for which valuable films were apparently most available.

In consequence, we consider it to be of interest that the artifact which was most likely accountable for the dissonance categorizations imposed upon the NSF respondents was one dependent upon *the relative adequacy of the AV budgets in the schools involved*. This outcome would be so pedestrian that it would be unworthy of report did it not suggest, at the same time, that attitude toward the film vehicle is a variable of little importance, and for that reason few teachers have what in this context could, in fact, properly be called "attitudes." If the film vehicle is, as suggested, largely taken for granted--so that teachers' "attitudes" towards the vehicle cannot be reliably discriminated--it follows *by definition* that dissonance can not exist in this area of a teacher's life. This is, of course, because the definition of dissonance includes as an integral part the concept of attitude.

CHAPTER FIVE

A TEST OF NETWORKS

The course of action originally proposed for this phase of the investigation, called for a testing of the sociometrically determined "AV-relevant" communication networks that we had expected to discover in the six schools comprising the non-normative group of respondents. However, we failed to uncover any groups of persons with visible audiovisual interests. This left us in a position somewhat analogous to that of the person who believes in the existence of the Abominable Snowman. No one has proved that the Abominable Snowman does not exist. This fact, unfortunately, gave us the freedom to continue believing. We continued to believe that there just may exist networks of the sort we had fruitlessly sought, and which effort we resignedly described, in Chapter Two. We therefore delayed initiating this testing phase of the study for a period of time as we carried out additional analyses of our sociometric data. Our hopes were to no avail.

Even so, we proposed to forge ahead despite all misgivings and doubts, to try and determine whether differences could nevertheless be found in how widely a message would be disseminated by classes of teachers who differed in (1) the degree to which they were interconnected with other members of their department, or (2) in their formal position within the school organization.

Procedure. Teachers were selected from among those interviewed in the six Indiana High Schools, according to the number of times they were mentioned as "persons with whom [the respondent] most frequently share[d] ideas or information" (see Appendix E). Two groups were formed. One group consisted of teachers who received many choices; the other group consisted of teachers who received few choices.

Frequently named teachers were designated "high sharers" and infrequently named teachers, "low sharers." No absolute criterion could be used for determining who the high and low sharers were, if this was taken across departments and across schools. Therefore, the one or two teachers in a department who received the most or the least mentions in that department were designated high sharers and low sharers, respectively.

Department heads were a third group drawn from the same sample. They were not included as potential candidates for membership in the high sharer and low sharer groups. One might expect that a department head would tend to be a person with whom the teachers in his department frequently shared ideas. Actually, we saw in Chapter Two that there was only a weak tendency in this direction.

The selection of an appropriate message, and an appropriate source for the origination of this message, was thought to be a crucial problem. It was important that the respondent not perceive the message as an inquiry from a research group but as a message which under normal conditions might have been directed to him in his capacity as a teacher. The message should be interesting enough to the respondent that he would read it, discuss it with other teachers, and return the questionnaire; but it should not cause the respondent to feel any unusually strong pressure to comply. Finally, the message chosen should serve a worthy adjunctive function.

The message finally chosen--hereafter referred to as the "AV message"--was a reprint of an article from the January, 1962, issue of *Audiovisual Instruction.* The source and purpose of the AV message was identified, through individually typed letters, as coming from the State Audiovisual Supervisor, and asked the respondents to help the state department in its future planning by reacting to the article.

The article selected described an ideal classroom of the future. This classroom was to be equipped with all sorts of marvelous devices and materials. Included with this article and the letter from the State Audiovisual Supervisor was a questionnaire that asked the teacher to imagine that he had a classroom something along the lines described in the article. This classroom was to be used solely by himself, and he was to equip his room according to his own wishes. Any equipment chosen was to be solely for his use and permanently installed in his room. But unlike the ideal situation depicted in the article, he was limited in what he could have. He was, therefore, asked to list, in order of preference, those devices he was most anxious to have.

This particular information was sought in order to make the request from the State Audiovisual Supervisor appear legitimate, but also because it had interest in its own right as is discussed in the next chapter. Primarily, though, we hoped this task would be interesting to the teacher and that he would discuss the article with other teachers. The letter to the respondent mentioned that the State Audiovisual Department was interested in the reactions of other "experienced" teachers, and requested that the respondent "list the names of those teachers with whom [he had] discussed the article." This last was the datum of concern in this chapter. (All materials used can be found in Appendix A.)

In order to determine whether the AV message would elicit the desired response, a first mailing was sent to certain teachers in the two Gamma schools. The sample of teachers at one Gamma school consisted of seven department heads, while at the other, nine teachers were contacted. The group of nine teachers comprised a high and low sharer from each of four departments (science, mathematics, social studies and English) and a low sharer from the foreign language department. One of the nine teachers was also a department head. No other teacher in that department received enough choices to be classified as a high sharer.

Only five replies were received from this sample of 16 teachers, and all these were from department heads. No conclusive explanation for the failure

Table 5.1

Assignment of Teacher Classifications by Schools

and Departments, Second Mailing

(Non-normative group)

Department	Schools			
Science	High[a]	DH[b]	DH	Low[a]
Mathematics	High	Low	DH	DH
Social Studies	Low	High	DH	DH
English	DH	Low	High	DH
Foreign Language	DH	DH	Low	High
Business Education	DH	DH	Low	High

[a] Indicates that the two highest or lowest sharers (excluding department heads), were selected from that department. Teachers who taught in more than one department were not included because infrequent naming of this teacher could be a consequence of that teacher spending less time in the department than did the "average" department member.

[b] Indicates department head.

Table 5.2

Summary of Responses to Mailed Questionnaire
(Non-normative group)

Teacher Category [a]	No. of letters sent	No. of questionnaires returned	Per cent of questionnaires returned	Average nc. of persons named
Department heads	10 (8)[b]	6 (5)	.600 (.625)	2.67 (5.00)
High sharers	12 (3)	6 (0)	.500	3.16
Low sharers	12 (5)	3 (0)	.250	0.33

[a] One teacher qualified as both a high sharer and as a department head. He was classified as a department head.

[b] The numbers in parentheses represent the data from the first mailing. As explained in the text, these were originally intended as pilot data.

of nondepartment heads to return the questionnaire was apparent. The end of the school year was fast approaching and so, despite this surprise, the same materials were sent without modification to a sample of teachers in the four of the remaining six schools of the non-normative group.

Thirty-four teachers were selected in a manner illustrated by the schema presented in Table 5.1. The effort represented in Table 5.1 was an attempt to balance the assignment of department heads and of low and high sharers both across schools and across departments.

Results. Table 5.2 summarizes the results of both the first and second mailings. Follow-up letters were sent to all the persons named by the (first selected) respondents as being persons with whom they had discussed the AV message.[20] The differences between department heads, high sharers, and low sharers in regard to the number of questionnaires returned was not significant at the .05 level. Neither was there a significant difference between these three groups in the number of names listed (purportedly the number of persons with whom the respondent had discussed the AV message). In the case of both the first and second mailings, the differences observed were in the expected direction. When the two mailings were combined, these differences became significant.

Originally the first mailing was intended to be a pilot trial. As it turned out, the only uncontrolled difference between the first and second mailing that was apparent to us was a time difference of about three weeks. It would seem that since the second mailing was quite close to the end of the school year that responses to the second mailing would have been relatively fewer than to the first mailing. Actually, the opposite was true. We therefore could see no reason not to combine these data except, possibly, for the inexplicable failure of nondepartment heads to respond to the pilot mailing. In any case the decision was made to combine.

The differences between the three groups in the number of questionnaires returned by each group was significant ($p < .05$, two-tail chi square test). We therefore concluded that department heads tend to respond more frequently, and low sharers less frequently, than chance expectation would lead one to believe.

A Kruskall-Wallace one-way analysis of variance (Siegel, 1956) showed that the number of persons named by the members of each respondent grouping also differed significantly ($p < .05$, $H = 6.204$, 2 df).[21]

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[20] Several respondents took the trouble of having the persons whom they named check their (the named person's) equipment preferences on the same questionnaire they themselves had used. Some of the named persons also enclosed comments about the AV message on the naming respondent's questionnaire. Follow-up letters were not sent to many of these persons because names and addresses were unavailable. Several questionnaires were returned just before or during summer vacation. The names given on these late questionnaires could not be followed up.

[21] According to Siegel (1956), if $n_j \geq 5$, the chi square table for $df = k-1$ (in this case 2) is appropriate to determine significance. In this test one of the groups includes only three cases. Siegel does not discuss the case where one or more n_j's may be less than five. He does give an example using seven groups where two of the groups have n's of four. He handles these in the standard manner.

Summary comment. The data suggest that department heads are more likely to respond to messages originating from the State Audiovisual Supervisor than are teachers who are not department heads. Department heads are also at least as likely as high sharers and more likely than low sharers to discuss an AV message with their colleagues. A similar statement can be made about high sharers *vis-a-vis* low sharers.

The implications of these results for one conducting an information campaign are hardly profound. The results cannot be generalized in order to make predictions as to the results to be expected from a source that is very much different from the source we used. A person in a formal role, as for example a department head, is probably extrinsically motivated to respond to a message from another whose formal role is in some respects superordinate to his own. This may be true even if there is no connecting line of authority and responsibility between the two individuals. The differential results between high sharers and low sharers might be practically useful to a message diffuser, although it is not clear whether such results would be of sufficient value to warrant the expense of determining who the high sharers are.

Had the earlier anticipated evidence of AV networks been forthcoming, positive findings in the present context could more justifiably have been generalized in useful degree for practical purposes. Since this was not the case, the reader may well wonder as to why this phase of the study was executed. The effort described in this chapter seems especially wasteful when viewed from the vantage point made possible by hindsight. The answer, we suppose, is that we were still looking for the Abominable Snowman. The procedures described here, in addition to the main purposes, had a potential for uncovering our long-sought networks. Perhaps the chief value of the effort described in this chapter lay, then, in "confirming failure." It seems a little more certain than before that what we have called "AV relevant networks" are fictions.

CHAPTER SIX

ATTITUDES TOWARD NONFILM AUDIOVISUAL RESOURCES

In Chapter Two we told how a very influential individual, referred to as O. P. M., had been responsible for increasing the use of the overhead projector in his high school and school district. He made almost daily use of this device. It was not especially relevant to report the fact in that context, but O. P. M. was only an average user of instructional motion picture film--i. e., average in comparison with other science teachers in his school.

There were other teachers who stood out as effective exploiters of some particular medium or material who were not mentioned because they had not influenced others to follow their practices. One was a teacher who had produced hundreds of 2 x 2 slides that he used continually in his teaching. But, as was true in the case of O. P. M., there was no evidence that other audiovisual resources than 2 x 2 slides were especially exploited by this teacher.

The Problem. This suggests a question the answer to which is as consequential for planning an information campaign as any asked in this study. The question is this. Is it true that some teachers are "sold" on the instructional utility of audiovisual resources in general, while other teachers are not; or is such a generalized attitude (positive or negative) largely absent? Our impression is that there has been a largely implicit tendency in the audiovisual field to answer this question affirmatively--a tendency to hold the view that teachers, on the average, have favorable, neutral, indifferent, or unfavorable attitudes toward audiovisual resources in total.

We have seen repeatedly, throughout the preceding chapters, that the preference for, and extent of use of films, is significantly a function of the subject area in which a person teaches. However, if the subject taught makes such a difference in a teacher's evaluation of a single AV medium, how is one to understand a "generality of attitude" point of view? Answers to these questions are important for if little generality of attitude exists it would be necessary to plan many different campaigns — each focused on a different combination of media (or materials) and subject-matter area. On the other hand, the discovery of a high generality of attitude would indicate that such a degree of differentiation in approach was not required, and the task would, of course, be simpler.

This, then, poses the major question of this chapter. In addition to this question, but by no means unrelated to it, are the following questions. What kinds of instructional materials do teachers most frequently use? What materials, of those available for use, are most preferred? What materials would be preferred if a teacher could choose anything at all without regard to cost or concern for convenience?

I. What Materials Were Most Frequently Used?

To answer the first question, the teacher-respondents were presented with a list of materials and devices that, through previous study, we determined were fairly commonly employed. The teacher was handed a sheet of paper on which these particular materials were listed; at the same time he was given the following verbal instructions:

> On this sheet are listed a few of the better-known instructional materials. You have probably heard or read about most of these even if you haven't used many of them.
>
> Opposite the name of each instructional material would you first check whether or not you have ever used the material at any time in your classroom teaching? And second, for those that you have used, please rank them from the most useful (Rank #1) to the least useful.

Twelve items were listed, as can be seen from an examination of Table 6.1. The subjects whose responses are recorded there, were the teachers from Alpha High School ($\underline{N} = 50$) and from Beta High School ($\underline{N} = 95$). The two items of the twelve listed that were judged by all teachers in both schools as most used were (1) instructional motion picture films and (2) maps, globes, charts, and graphs. When these twelve items were put in order, according to the number of teachers who reported using them, there was no large gap in the numbers to indicate that any group of materials was used much more than another group. Of course, there was a large difference in usage between the most used and the least used materials. The two schools agreed in these judgments (Spearman rho $= .87$, $\underline{p} < .01$).

II. What Materials, of Those Available, Were Most Preferred?

Table 6.1 answers the topic question by showing that, in general, the most frequently used materials were also the most preferred materials--preferred, that is, from among those materials the teacher had used. This, of course, placed a marked restriction on the respondents' preference judgments. As a consequence, this observation would be trite if ease of access were constant for all the materials considered. Again, when the two schools were compared, they showed high agreement in their ranking of preferences (Spearman rho $= .93$, $\underline{p} < .01$).

This picture changed, however, when these data were broken down by subject-matter areas. In this part of the analysis, science, social studies, English and foreign language, and mathematics teachers were considered separately. Teachers who could not be classified into one of these categories (approximately half the total) thus had to be excluded. This procedure so greatly reduced the

Table 6.1

Number of Teachers Reporting Usage of and Preference for Various Types of Audiovisual Materials in Alpha and Beta High Schools
(Non-normative group)

Audiovisual Materials	Usage			Preferences [a]		
	Alpha N = 50	Beta N = 95	Both	Alpha	Beta	Both
Instructional Motion Pictures	44	80	124	29	55	84
Slides	27	53	80	7	9	16
Filmstrips	27	74	101	13	45	58
Disc Recordings	22	55	77	16	20	36
Tape Recordings	27	37	64	15	16	31
Radio (Use outside classroom)	8	33	41	2	0	2
Radio (Use in classroom)	14	41	55	1	1	2
Television (Use outside classroom)	21	55	76	8	7	15
Television (Use in classroom)	6	21	27	1	0	1
Felt or Flannel board	6	23	29	2	3	5
Models or Specimens	31	61	92	22	41	63
Maps, Globes, Charts or Graphs	38	74	112	36	58	94

[a] First choices were weighed by multiplying by two, and these figures were added to the second choices. Some teachers made no choices or only one choice, so totals will not agree with the reported number of teachers interviewed.

Table 6.2

Most Preferred AV Materials
(of Those Used), by Departmental Grouping
(Non-normative group)

Audiovisual materials	Mathematics	English & Foreign Language	Science	Social Studies	Total
Maps, globes, charts, graphs	12	7	2	19	40
Models or Specimens	13	2	12	0	27
Disc and tape recordings	0	15	0	1	16
Slides and Filmstrips	2	8	3	2	15
Motion Pictures	1	6	5	5	17
Total	28	38	22	27	115

Ns involved that data from two additional schools, Delta-1 and Delta-2, had to be brought in. [22] Slides and filmstrips were combined into one category as were tape and disc recordings. The materials most preferred in Table 6.1 were thus grouped into five categories as shown in Table 6.2.

Examination of Table 6.2 indicates that there was indeed a difference in the use of materials among the departments considered in the table. When the theoretical frequencies for a chi square test were computed from these data there were too many low frequencies to permit the application of the test. We therefore removed the tape and disc recording category, since it was only chosen by one department, [23] and substituted the second most preferred material for the teachers involved. The resulting table had sufficiently few low theoretical frequencies to permit use of the chi square test. [24] The chi square value obtained was significant beyond tabled values, indicating that teachers of different subjects preferred different kinds of devices and materials.

More detailed statements of some interest suggest themselves, but, lacking statistical tests of significance, what follows can be considered descriptive only of the particular teachers who responded. Thus, models and also graphs and charts were most preferred by mathematicians responding. [25] They had no interest in slides and filmstrips, or in motion pictures. English and foreign language teachers preferred disc and tape recordings. Science teachers favored models and specimens. Social studies teachers, understandably, favored maps, globes, charts, and graphs.

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[22] The reason that all six schools were not included in all these analyses was that continuing refinements in the questionnaires were made as we studied the six schools over a period of several weeks. This meant (as explained elsewhere) that not all schools could be used in all analyses, and for the reason that question-wording was sometimes noncomparable between schools. In the present instance, rankings of preference were obtained from the questionnaire in Alpha and Beta high schools. At the two Delta schools, the interviewer judged and recorded the respondent's replies when asked to rate each material as "most useful, " "least useful, " or "somewhere in between. " The questionnaire was constructed so that finer discriminations could be made (see Appendix E). Many ties were found in recording this data from the questionnaires. These were resolved by taking (as most useful) the material the teacher reported having used most often.

[23] Tape and disc recordings were dropped because it was one of the three least preferred categories and because it was only preferred by one department. The second choices of these teachers were then entered into the table. (Previously, if a teacher's first choice was not included among the five categories, the second choice was accepted and entered in the table.) If this procedure introduced a bias into the statistical test, we believe it was an error on the conservative side.

[24] The criterion suggested as a lower limit on the theoretical frequencies (Siegel, 1956) is that fewer than 20 per cent of the cells have expected frequencies of less than five and no cell has an expected frequency of less than one. These conditions were satisfied.

[25] The category that included graphs and charts also included maps and globes. In all probability mathematicians chose this category for reasons other than the mention of globes and maps; the evidence from interview notes bears this out.

The reader will recall that instructional motion picture films were used frequently and also preferred to a high degree. The question may therefore arise as to why films were not ranked higher than they were when the analysis was in terms of the area in which a teacher taught. In no subject area examined did the teachers prefer films above all the other media listed. The explanation for this is simply that film received a moderate number of votes in nearly all subject areas. On the other hand, materials such as tapes and discs, for example, received many votes from language teachers but scarcely any votes from teachers in other subject areas.

III. What Materials Would Teachers Prefer Under Ideal Conditions?

It will be recalled from Chapter Five that a selected group of teachers received copies of an article describing an ideal classroom of the future. The respondent was asked to imagine that he had a classroom similar to the one in the article — a room not to be shared with any other teacher. The classroom was to be equipped permanently with those audiovisual devices that the teacher himself chose. The respondents were to rank, in order of preference, the kinds of equipment they would like, and to do this on the assumption that sufficient materials were available for the equipment they chose. The equipment listed was: record player, tape recorder, television set, opaque projector, microprojector, motion picture projector, slide and filmstrip projector, and overhead projector. Space for "other equipment" was provided but this option was largely ignored.

The sample of respondents in the present instance is *not* representative of any universe that we can describe. The sample has to be classified as an "accidental sample" so far as its use in the present context is concerned. Moreover, *Ns* became very small when the data were broken down by subject-matter area.

The noted limitations were serious enough to warrant excluding these data from consideration. However, two considerations made us decide otherwise. These data represent relatively "uncontaminated judgments," because they represent teachers' judgments when freed from the hard facts of inadequate facilities, booking frustrations, etc. Furthermore, the direction of the results confirms to a small degree the answer given the problem of this chapter by more adequate data reported elsewhere.

Faced with these difficulties it was hard to decide how best to treat and present these data. In order to correct for disproportionate representation among the several subject areas, we made all areas equal in this respect by a straightforward arithmetical weighting. We then gave each first choice a score of two, and each second choice, a score of one. Lower-ranked choices were ignored. The results of this procedure are presented in Table 6.3.

Table 6.3

Preference Scores for Various Types of Audiovisual Equipment by Subject-matter Groups for Use in a Hypothetically Ideal Classroom

AV Device Preferred	Scores by a Subject-matter Grouping[a]					
	Mathematics	English	Foreign language	Science	Social Studies	Total
Television set					8	8
Micro-projector				16		16
Opaque projector		12		16		28
Tape recorder		12	77		12	101
Overhead projector	79	2		16	20	117
Record player		82	33		8	123
Motion picture projector	26	2	22	31	44	125
Slide and filmstrip projector	26	22		54	40	142

[a] These scores were computed as follows. All first and second choices were tabulated, with first choices weighed by a factor of two. The resulting totals for each subject-matter category were corrected so that each grouping had an equal total score. These corrected values rounded to the nearest integer are the scores reported above.

As the reader has been led to expect, it is not very meaningful to combine the judgments of teachers from different departments. Thus, for example, mathematics teachers preferred the overhead projector to any other piece of equipment--at least four out of five of them did--while only one out of six science teachers gave first choice votes to the overhead ($p < .005$, Fisher exact probability test, two-tail, Siegel, 1956).[26] The science teachers appeared to prefer a slide and filmstrip projector; English teachers, the (disc) record player; foreign language teachers, the tape recorder; and social studies teachers, the motion picture projector. Except for the first comparison above, these are to be taken as qualitative or interpretive statements, because statistical significance was not demonstrated.

The preferences obtained under these hypothetically ideal conditions were not comparable to those previously evoked for "normal conditions." It is interesting, therefore, that despite this, both foreign language teachers and English teachers gave the same preference under these very different conditions. These preferences were for tape recorders and record players respectively.

In the "normal situation," science teachers did not rate slides and filmstrips very highly. Yet in a hypothetically ideal situation, they indicated a first preference for a slide and filmstrip projector. After reminding the reader again that the present sample was accidental and small, we would conjecture that slides and filmstrips were not rated higher than they were in the "normal situation" because they were little used, and that they were probably little used because a limited amount of material was available. Recall that in the "normal situation" the respondent was instructed to express relative preferences for materials he had used. It seems a reasonable guess that availability of materials was a variable having strong influence here.

IV. Is Attitude Toward Film Generalized to Other Media?

Films have long been closely identified with "audiovisual"; and films, including the necessarily associated projectors, reflecting and darkening screens, etc. not infrequently have taken the lion's share of an audiovisual budget. Films, therefore, seemed to us to be a good example of what might be called a conventional or traditional "AV medium."

In order to determine whether a favorable (unfavorable) attitude toward film is likely to be associated with a favorable (unfavorable) attitude toward other media (in the present case with media with which the teacher has had little or no experience), the following procedure was employed.

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[26] To our knowledge, the Fisher test is the only legitimate test we could apply to these data to determine if there were significant differences in equipment preferences between teachers of different subjects. This test could have been applied with the restriction that we consider only one material at a time and compare the first choices only (the second choices only, etc.) of two subject matter areas at a time. We did a few of these extraordinarily tedious tests and judged that with the noted restrictions a majority of the tests would not be significant at the usually acceptable five per cent level of confidence.

After the teacher had completed his response to a question on the "newer media,"[27] he was instructed as follows:

> Although you may have had little (or no) experience with these newer media, the U. S. Office of Education is interested in your appraisal of their probable usefulness in your subject area. In terms of what you have heard or read, or in terms of any experience you have had, how would you judge the probable overall usefulness of these so-called newer media?
>
> Put a vertical line through the scale marked "newer media," at the point which most clearly indicates your feeling on this.

(The respondent was then presented an attitude continuum in order that he might mark it as instructed.)

Later, following the questions concerning deterrents to the use of instructional film, the respondent was asked this question:

> In terms of your experience in teaching [name of subject the respondent taught], how would you judge the overall usefulness of educational film?
>
> Put a vertical line through the scale that is marked "Film" at the point which most nearly indicates your feeling on this.

Finally, following a series of open-end questions on "airborne television,"[28] the respondent was asked this question:

> In terms of what you have heard or read about [the use of] television in the classroom, how would you judge its probable usefulness in your subject area? Would you put a vertical line through the television scale at the point which most nearly indicates your feeling on this?

Although each of these three judgments was separated from the other two, in time, and although each judgment was preceded by "questioning discussion" of the medium to be judged, all three judgments were recorded by the respondent on the same sheet of paper. This was done because it was desired that these be relative (or comparative) rather than absolute judgments. (See Appendix E for an illustration of the format that was used.)

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[27] The question on newer media asked the teacher if he was familiar with any of the following: closed-circuit television, language laboratories, automated self-teaching devices, scrambled books, micro-projectors, overhead projectors, and opaque projectors. If he was familiar with any of the foregoing, he was asked if he had used the material at any time in teaching. Finally, if he had used the material, he was asked how useful he thought it was.

[28] Reference was to the Midwest Program on Airborne Television Instruction (MPATI) which, at the time of these interviews, had not yet begun televising regular classroom instruction. Most of the respondents had had no experience with the regular use of television in the classroom, but, thanks to MPATI, a number of them were soon to have this experience. Several teachers, during the interviews, did refer to an educational television station operated by the Chicago School System, whose programs they had viewed.

Three kinds of information were taken from the three scales described. (Hereafter, these scales will be referred to as the "attitude trilogy.") Two of these were (1) the rank order of the respondent's preferences for the three media, and (2) the absolute placement along the attitude continuum of his most preferred medium. For example, a respondent might rate the value of the three media in this order: Film, the New Media, TV. This was recorded as such. We then looked to see whether Film, the respondent's first choice in this illustration, was marked at some point along the first third (favorable end), the middle third (neutral portion), or the last third (unfavorable end) of the Film attitude continuum. This information was also recorded.

Averaging across all respondents used in this analysis (all those interviewed from Alpha and Beta high schools), it turned out that the above illustration (showing the preferred order to be Film, New Media, and TV) was representative. Of 118 persons who ranked these media without ties, approximately 42 per cent favored Film. Next most popular were the New Media (37 per cent), while TV was least popular (20 per cent). It is unlikely that this was a chance outcome ($p < .01$, one-sample chi square, two-tail test).[29]

In order to answer the question as to whether or not attitude toward film is correlated with attitude toward other media--in this case, TV and the "New Media" --a third type of information was used. First, three scores were assigned to each respondent depending upon the position of his judgment on each of the three attitude continua. Each continuum was divided into 24 equal segments, and a respondent's score on each scale was determined by the segment (1-24) that included the vertical line he had drawn to indicate his opinion. The highest possible score was 24, where high scores were associated with favorable opinions. A score of one was given if the respondent marked the extreme right-hand segment, but in the few cases where the mark was placed at the extreme right-hand edge, the score given was zero. No significant correlations were observed between any of the three possible pairs of scores: i.e., Film vs. New Media, Film vs. TV, or New Media vs. TV.

Being favorable (or unfavorable) toward one of the three media was not associated with being favorable (or unfavorable) toward either of the other media; and a "generality hypothesis" is, therefore, untenable. However, some interesting effects were observed that led us to make the following additional analyses - first, a word of explanation.

Students of attitude measurement agree that when an attitude is well crystallized--meaning that the respondent has few subjective feelings of doubt about where he stands--judgments tend more toward the extremes of the attitude continuum than is otherwise the case. Also, the respondent is more willing to sharply discriminate among several attitude objects. When, on the other hand, attitudes or opinions are hazy or vague, one is in doubt about his judgments; and when asked to discriminate among several attitude objects, he tends to separate them to a lesser degree.

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[29] We mentioned persons who ranked the media without ties. Fourteen persons, however, did not believe they could separate these media this well. Six of these fourteen persons ranked Films and the New Media equally. Five of them ranked TV and the New Media equally. One person ranked Film and TV equally, while two ranked all three media as of equal value.

We observed this phenomena occurring in the case of the data from the attitude trilogy. Two persons might rank the three media in exactly the same order, and they might place all three media in the favorable halves of the three attitude continua. On the other hand, one person might separate the media quite sharply, while the second person might barely separate them. Consequently, we defined a "variability score" in order that we might observe the effects of this "variability" variable "through fewer clouds." The variability score chosen was the range. This was secured by taking a respondent's highest score on the attitude trilogy and subtracting from it the lowest score that he earned on the trilogy.

These variability scores were extremely variable. For example, 20 respondents had variability scores of from 15 to 24 scale points, while 28 respondents had variability scores of three or fewer scale points. Because of this--or rather because of the associated suspicion that respondents displaying so markedly different variability scores might also display other differences relevant to the present problem--the variability scores thus calculated were used as a basis for forming more homogeneous sub-groupings.

Six groupings were thereby formed, and they were composed in the manner shown in Table 6.4. An examination of this Table suggests that the mean judgments for Film, New Media, and TV are a function of the particular variability grouping under consideration. This is also suggested in regard to the index "most favored medium."

Thus, when only the respondents with the highest variability scores are considered (scores ranging from 15 to 24 scale points), the mean score for the New Media is highest. The New Media mean is 16.3 while that for Film and for TV is tied at 11.0.

At the low end of the variability range, where no variability score was larger than three, is found the only subgrouping that gave TV the highest mean score. Since this observation was based on the subgrouping that showed the smallest variability scores, all three means were necessarily close together, as Table 6.4 indicates.

Having achieved a basis for matching respondents--i.e., by grouping them according to the magnitude of their variability scores--it became possible to do a Friedman two-way analysis of variance (Siegel, 1956). It was felt that this test would indicate whether the favorableness or unfavorableness of the subgroupings of respondents toward the medium under focus depended in significant degree upon the respondent's characteristics--whatever they may have been--that were indexed by the respondent's variability score.[30] Friedman tests were therefore applied

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[30] Of course the "characteristics" we had in mind were of the sort previously alluded to and they included, prominently, the degree to which a respondent had crystallized the attitudes or opinions assessed. We should mention though that pervasive, broadly ramifying personality traits would, in all likelihood, also play a part. See, for example, Sherif and Hovland, (1961).

Table 6.4

Number of Teachers Judging Each of Three Media as Most Favored, and Teachers' Mean Judgments of these Media, by "Variability Grouping"

Variability score	Most favored medium						Sum
	Film		"New Media"		TV		
	n	$\overline{X}$	n	$\overline{X}$	n	$\overline{X}$	
15 - 24	7	11.0	8	16.3	4	11.0	20
11 - 14	10	16.1	7	15.0	2	13.4	22
9 - 10	12	15.2	6	15.9	4	13.1	22
6 - 8	5	14.6	10	16.4	0	13.3	19
4 - 5	7	15.2	4	15.2	4	15.3	19
0 - 3	4	17.1	4	17.0	5	17.4	28

to the mean scores and to the frequencies recorded in Table 6.4. Mean judgments for Film, New Media, and TV did not differ significantly. The number of respondents who favored one of the different media, were also shown by a Friedman test to be not significant.

In concluding, it appears that teacher preferences for what we have called the "conventional media" are highly dependent upon the subject area in which the teacher teaches. Moreover, the tendency for a teacher to favor (or to disfavor) Film was not a generalized tendency that would help one predict a teacher's probable acceptance of media with which he had had little or no experience.

These findings cast considerable doubt upon the validity of any measuring instrument claiming to measure attitude (or opinions or preferences) toward audiovisual materials _in general._

CHAPTER SEVEN

A REDEFINITION OF THE PROBLEM

To be sure, we have had our share of methodological difficulties in carrying out this study. However, some failures were failures of logical necessity, because the questions asked were logically faulty. A common thread running throughout the sections of this chapter is a concern to explicate this assertion, and to develop what we believe is a more accurate conceptualization of the central problem of this investigation.

This chapter is divided into three parts. In Part One an interpretive summary of our findings is presented. This leads to a more precise view of the sort of logical difficulty with which the present investigation has been plagued. In In Part Two a partial solution for this logical difficulty is offered, as are a few guidelines for carrying out information campaigns to increase the effective use of audiovisual materials. Finally, in Part Three, we present a more generalized statement of the conclusions of the first two parts. We attempt to state the central conceptual difficulty and the thoughts for its solution in a more general form, one applicable to a range of AV problems.

I. An Interpretive Summary

We have stated the goal of this study to be that of acquiring knowledge useful in planning an information campaign to increase the use of AV materials. The primary limitations of the study were that it was to be restricted to the secondary level, that it was to be primarily concerned with the "more conventional" AV devices and materials, and that the barriers inhibiting utilization that were to be studied were barriers of a "social-psychological" sort. More particularly, utilization barriers of an attitudinal-informational variety, as distinguished most clearly from fiscal-administrative problems, were the barriers of central interest.

Studies of the mass media following World War II revealed that mass media communicators do not directly influence their audiences in anywhere near the degree that had commonly been supposed. Rather, the influence of the mass communicator was found to be largely mediated and, generally, to be effective only when it was mediated. The mediators or "second parties" were persons who were likely to attend to the mass media more than was usual. They, in turn, carried the "mass message" to their friends. These second parties came to be called "opinion leaders," and the influence they exerted was referred to as "personal influence" because it occurred between friends or associates in a face-to-face situation.

These discoveries caused us to set as important first tasks, the discovery of any opinion leaders that might exist in the high schools studied, and the networks of communication through which "AV-relevant" information might pass. While there were opinion leaders and definite networks through which they exerted influence, there were no opinion leaders who exerted influence relative to the uses (abuses, etc.) of instructional film. Since instructional films are useful in nearly all subject areas and at all grade levels, one might wonder why teachers are (or appear to be) reluctant to recommend the value of instructional film. If a teacher accepts the value of film--and we learned that most do--one might expect that some of these favorable-attitude teachers would become vocal advocates of the use of film.

In examining this problem we were concerned about the type of person who could successfully fulfill a role as informal "film-recommender." We came to see that such a person would have to be very highly specialized in several subject areas. It takes knowledge of physics to recommend a physics film, knowledge of biology to recommend a biology film, and knowledge of English literature to recommend a film on English comedy, etc. There may be persons who could fill this role at the elementary level, but such persons would be more rare at the secondary and college levels — especially in the sciences.

In the attempt to discover whether "AV networks" existed, it became clear that the subject a teacher taught was the most important determinant relating to the formation of any such networks. More accurately (because no evidence of opinion leadership was found) the subject a teacher taught was found to be the most important determinant to naming the persons with whom he might discuss a film.

Although we found no evidence of opinion leadership with respect to instructional motion pictures, one notable example was found that involved the overhead projector. In Chapter Two we presented the case history of the opinion leader involved. He was a science teacher and was responsible for increasing the use of the overhead projector in his high school and school district. He personally made daily use of this device. Even so, this individual was only an average user of instructional motion picture film. Other teachers also stood out as effective exploiters of some one particular device or material, although none of them were previously mentioned because none of them had exerted influence upon any of his colleagues to try what he had found to be so valuable in his own teaching. Significant to this study was our inability to find evidence that any of these teachers were more likely than the common majority of teachers to exploit effectively some second device or material. This caused us to wonder about what we came to call the "generality hypothesis." We began to ask ourselves whether it was true that some teachers are "sold" on the instructional utility of AV resources in general, while other teachers are not, or whether such a generalized attitude (positive or negative) was largely absent. From the literature, one can discern a tendency in the audiovisual field to answer this question affirmatively.

In Chapter Three, we noted a strong tendency for the majority of teachers to indicate that they regarded motion picture film as having high instructional value. In this phase of the study, we sought to learn the magnitude of correlations between what we thought were measures of attitude, and measures of other variables. These latter were such variables as the frequency with which films are used, the amount of knowledge about and degree of training in AV, the deterrents to usage a teacher has experienced while using or trying to use audiovisual materials, and the manner in which certain particular deterrents to usage are perceived. Of the many predictions involving some one of several attitude measures, quite a number were confirmed. However, these statistical confirmations did not seem very meaningful after we began to examine them critically.

For example, we predicted a positive relationship between attitude toward film and frequency of use. This was an obvious prediction, we thought; not one apt to be more than usually complicated by other variables.

We also believed that the subject a teacher taught might bear upon a number of things we were interested in; but, in the beginning, we did not believe it would be a very significant factor affecting usage. At least we thought it would be of relatively little importance in our reasonably homogeneous sample of high school science and mathematics teachers (as in the NSF study), and especially by comparison with the variable of attitude. We therefore made no specific predictions in respect to "subject taught, " though we gathered information on this point.

However, as we made more and more breakdowns of the same data in terms of different pairs of variables, something unexpected began to appear. The very variable we had originally slighted — vis., the subject a teacher taught — turned out to be a better predictor of frequency of usage than was attitude. The subject taught was also a moderately good predictor of attitude itself, but it predicted usage more accurately. Thus, for example, the mathematicians were less favorable toward film than were the science teachers, but even so, very few mathematics teachers were not at least "moderately favorable" in their attitudes. Their usage, however, was way below that of the science teachers.

It may well be argued, of course, that the noted tendency for teachers to hold positive attitudes or opinions was not what it appeared to be. If a teacher states that he believes films are an important instructional device, but fails to use them, this might indicate that the teacher is just too lazy or otherwise insufficiently interested to put forth the effort to do a good job of teaching. Or the teacher might have a genuinely negative attitude toward film, but think it expedient to deny this fact.

In Chapter Four, we centered our attention on this sort of possibility. We anticipated finding a group of dissonant teachers--i. e., teachers with favorable attitudes but who seldom if ever used instructional film. We found no such group. Or, more accurately stated, the group of favorable attitude teachers who used a great many films did not differ from the group of favorable attitude teachers who used few or no films, on any of the several measures applied to them. These two groups were, in fact, surprisingly similar. Rather than finding evidence of dissonance, we found evidence that the favorable attitude teacher who was an infrequent user simply faced greater utilization barriers than were faced by the favorable attitude group whose membership was comprised of frequent users.

In Chapter Six, we were most concerned with a further testing of the "generality hypothesis." This hypothesis, as it was in the beginning, can be correctly described only as an unrecognized implicit assumption. We wished, therefore, to test further in order to see whether our belief that it was invalid would be sustained. No evidence supporting the "generality hypothesis" came to light, and there was moderately strong evidence disconfirming it. Evidence was also presented that again affirmed that the subject a teacher taught had a great deal to do with the kinds of audiovisual materials that were preferred.

"Subject taught" and the "generality hypothesis." The preceeding interpretive summary has highlighted two things: *viz.*, the importance of the variable "subject taught," [31] and the very doubtful validity of what was labeled the "generality hypothesis." We believe these two outcomes have a common explanation.

First we ask, what basis is there for expecting or not expecting these outcomes? It is our view that were one to hold primary concern for AV in general (for media, devices, and materials), while largely ignoring the content variables of messages, then these outcomes would not be anticipated. If one were primarily concerned with message content variables, on the other hand, these outcomes would be anticipated.

To help explain this, let us liken an instructional vehicle such as a film, to a container such as might contain a healing drug. That which the film "contains" is a *message* on film. More clearly with filmed messages than with drugs, inadequacies in the "container" — weak audio, inadequate lighting, improper processing, etc. — may readily have a destructive effect upon the message contained. But the teacher, no less than the physician prescribing a drug, would be expected ordinarily to show more interest in the contents than in the container, in the filmed message than in the fact that the particular vehicle was film. The teacher, indeed, takes film as a vehicle pretty much for granted.

What would happen, then, if one should ask teachers about the film vehicle? If the message is taken for granted, though not the vehicle, the teacher might respond by explicating some strengths and weaknesses of the vehicle *qua* vehicle, for the various purposes for which that particular vehicle might be used. Thus, teachers might respond that by means of the film vehicle one can present instances of referent categories not available for direct presentation to the senses because of the magnitude of time/space factors; and that, similarly, one can do this in the case of things that are too small or too large or too fleeting to be comprehended were they in fact presented to the senses. Or the response might be that by means of various distortion techniques one can focus attention on those features of a physical situation that are basic for the formation of some particular concept, etc.

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[31] In a personal communication, Dr. Eleanor P. Godfrey has reported to us that her nationwide survey of audiovisual programs revealed *subject taught* to be the most important variable determining teachers' use of audiovisual materials. Dr. Godfrey's research is being supported by the U. S. Office of Education.

But teachers don't respond this way. They don't respond as though the message were taken for granted, though not the vehicle. At least none of the several hundreds we talked to did. Rather, they responded as though the vehicle were taken for granted, but not the message.

Different types of vehicles surely have different strengths and weaknesses. If, among other things, these strengths and weaknesses are correlated with the kinds of restrictions vehicles place upon the messages they can carry, then a "generality hypothesis" is to be sharply challenged. Thus, depending upon what is needed to meet a particular instructional objective, different sets of values will be placed upon the very same vehicle. To the extent teachers deal with different content, with different age groups, with different interest groups, etc., one would expect to find very great differences in the values they place upon the various instruments that aid them in communicating effectively.

We would stress particularly a point that was noted in a previous chapter: viz., that many of the teachers we talked to gave full expression to the notion here under development. These teachers knew that expressions of attitude toward the value of film were more properly opinions of the value of the kinds of film messages typically available in a particular subject area. Teachers of two different subject areas, when asked to indicate how valuable they regarded film to be, often asked us, "For which subject?" They evidently judged the instructional value of film quite differently for each of the two subject areas in which they taught.

We can now more precisely describe the kinds of pitfalls alluded to so far. A researcher's interest may be in the vehicle, in the message, or in the interactive effects of message and vehicle. Depending upon where his interest lay he would be expected, in turn, to formulate questions designed to ellicit information about the area in which he was interested. And, depending upon his success in formulating his questions, he may have gained information about vehicles when he sought it, or he may have gained information about vehicles when he sought information about messages, and vice versa.

If, now, a researcher asks about vehicles, but gets responses that are determined by the kind of messages mediated by that vehicle, or if he asks about messages but later uses the responses gained as if they were responses relevant to some vehicle, he will surely be in trouble.

Thus, in a prominent research report concerning the instructional value of film, the conclusion was reached that the effective use of effective and appropriate films is effective (i.e., it speeds learning and facilitates retention). This statement was offered as an empirical statement: a research conclusion. It is a statement not to be doubted, but not because it is supposedly supported by research, but rather it is not to be doubted because it is tautological.

How could this happen? We believe we have stated the answer above. If learning variables were of concern, as must have been the case, message variables had to be of paramount interest. The results obtained, however, were stated in a way that implied that film qua vehicle was somehow primarily responsible for the research outcome.

Similarly in the present study, if one expects the "generality hypothesis" to hold, it is probably because one is thinking in terms of media or of communications devices. But when one then asks questions of a respondent who takes the device for granted and whose answers reflect his experiences *with the messages* that happen to have been mediated by the device, it is no surprise that a "generality hypothesis" fails. One does not expect "generality" or a common set of key concepts to be employed in markedly different subject areas, even though the same vehicle may be used to mediate messages in different areas.

We trust it can now be seen that (1) the invalidity of the "generality hypothesis," and (2) the importance of the variable "subject taught," are but two manifestations of the very same underlying fact. This is that "the media are promiscuous, they are not particular about the sorts of messages for which they will serve as vehicles. The very same instructional device that can make possible the clear perception of the anatomy of a frog for an anatomy class can do the same for other sorts of anatomies as in the stag film of the "smoker." But these two anatomical studies probably lack equivalent instructional value for most purposes.

Summary comment. The discriminations one makes (or the distinctions one draws) about one's world, have a lot to do with the questions one is led to ask about it. As Langer (1942) has lucidly shown, the formulation of a question has a great deal to do with the kinds of answers that may be given in response to it.

Thus, in holding special concern for various of the vehicles of communication, AV researchers have been led to wonder about differences between these several vehicles. This has led to the "comparative media question." That is: "Is any one medium of instruction intrinsically superior to all other media of instruction?" But this is an invalid question because implicit within it are several invalid assumptions. This question assumes, for example, the existence of but one kind of learning process and but one kind of learner. That is, there is no hint that the degree of superiority of a medium may be a function of message variables or of learner variables. The question further assumes that the instructional device, as a *device,* is that which is importantly related to the instructional (or learning) process. Therefore, the device and not the message mediated by the device is the independent variable of concern. Either this is assumed or it is assumed that message and message-mediating device are perfectly or highly correlated

The fact of relative independence of message and message-mediating device, when unrecognized and replaced by the implicit invalid assumption of a high correlation between these two things, is sufficient in itself to doom all comparative media studies to failure. Any such research is superfluous, for a logical analysis more quickly and economically leads one to the identical negative conclusion that will be reached by empirical research efforts only over a span of time.

What we have been preparing the ground to say is that researcher's in the AV field have not recognized the most fundamental distinctions that need to be made within their universe of interest. The present research shows evidence of this as does much AV research that has been concerned with learning. And, indeed, Mandler and Kessen (1959), suggest that most sciences are thus to be characterized in their early stages of development.

The task of the following section is to demonstrate this and to try to do something about it in a way relevant to the problem of designing an information campaign. However, this can not include a presentation of what we believe are the most important overlooked discriminations useful in facilitating AV research. Any such presentation would have to be defended, and the presentation of a polemic of the required complexity is too big a task. [32] It is possible, however, to call attention to a few less fundamental discriminations of a sort that have a reasonable degree of face validity, and therefore require no elaborate defense. Some of these will be seen to be suggestive of answers helpful in securing more effective use of audiovisual devices and materials.

II. Suggestions For An Information Campaign

To achieve a (socially desirable) change in behavior through an information campaign, according to Cartright (1954), there are three classes of problems that must be successfully dealt with. First, the members of the target audience must be made aware of the goals and the paths to be traversed in reaching the goals that the information campaigner has in mind. Second, the goal object must be made to appear sufficiently attractive so that the members of the target audience desire to attain it. Finally, the information campaigner must find ways of reducing the strength of competing goals, if a target member's achievement of the competing goal would preclude his achievement of the goal set by the information campaigner. These three classes of problems are referred to by Cartwright as: (1) the creation of the desired cognitive structures; (2) the creation of the desired motivational structures; and (3) the creation of the desired behavioral structures.

Creation of the Desired Cognitive Structures

If a teacher is simply unaware of many or most of the instructional materials for which the information campaigner holds concern – –with what these materials can do and with how to utilize them--then a big instructional task looms as the first problem for solution.

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[32] In our opinion, an area wherein there are to be found some of the most important neglected discriminations of interest to AV, is that area which embraces the verbal/pictorial category-pair. We believe that this historically important distinction has never been clearly understood. Nor has it ever been carefully explicated. Moreover, this category-pair has not generally provided any basis for careful research. The problems of experimental control in verbal/pictorial comparative studies are enormous, and we believe they can not be effectively overcome for most purposes, prior to a logical analysis of this so-very fundamental, verbal/pictorial, distinction. Until this is done, and until a good deal of research suggested by such an analysis is completed, we seem limited to the very general approach followed in the text.

In a preliminary report of a portion of this research (Knowlton & Hawes, 1962) we followed Cartwright's schema as in this report. The pertinent knowledge the respondents were presumed to possess was indexed on the basis of the respondent having completed or not having completed a course in the utilization of audiovisual materials. The respondents were summer session students who had had no previous AV course work, but who were then enrolled in an AV utilization course. Thus, they were conceived of as lacking the desired cognitive structures at the beginning of the summer session, but as having achieved them by the time the session concluded.

Most gratifying, perhaps, were findings which showed what was interpreted at the time as a high attitude-information relation. Increased information about the AV field was correlated with what was taken to be an index of favorableness of attitude. We are now inclined to dispense with the term "attitude," and we believe that the primary gain that came to the respondents as a result of their tuition in the AV course was of a nonattitudinal character. These respondents were shown new things of a high utility, the use of which would not, however, threaten their self-images as teachers. Less to be expected, perhaps, was the definite suggestion that these respondents came to see certain deterrents to the use of audiovisual materials as less unsolvable than before. Nothing was changed physically, but the subjects' increased knowledge apparently caused them to evaluate utilization barriers as being less serious than before.

Despite what was probably excellent instruction, we now believe there was a certain important sense in which the desired cognitive structures were incomplete. They were incomplete, on the part of the students, in the sense that the "knowledge" to which we make reference is yet to be discovered. (This assertion is examined in following sections.)

Broadness of application of a device. One distinction, about which a good deal of information needs to be gathered, is the broadness of the range of subject-matter areas for which a device has an application.

If the only thing one knew about three teachers was that one preferred the microprojector, another the Carl Zeiss planetarium projector, and a third, the overhead projector, the greatest number of errors in guessing the subjects these teachers taught would occur with respect to the subject taught by the teacher who favored the overhead projector. This is because the overhead is able to project anything that can be made into a transparency and it is therefore much more flexible than the microprojector or Zeiss projector. It follows that the overhead projector will be useful to a broader range of subject-matter specialists than will be micro- or Zeiss projectors. This is what we intend when we speak of the broadness of the subject-matter areas for which a communications device has application.

This distinction, applied to the data of the present study, implies upon logical grounds alone, that an information campaign directed toward a target audience comprising teachers who teach in diverse subject-matter areas and urging the values of diverse devices will fail. To illustrate the point let us suppose that rather than having asked why teachers didn't make more use of films, we had asked this question: "Why, in view of their proven utility, do not more teachers use the micro- and Zeiss projectors?" We would hardly have been startled if teachers of astronomy had told us that they thought microprojectors were very useful devices, for biologists. It is hard to imagine, in other words, that we would have been surprised that the subject a teacher taught was a most important determinant in respect to this problem. And, in planning an information campaign, we would quickly recognize the inefficiency and the lack of educational value, in trying to persuade teachers of biology to use the Zeiss projector, and astronomers, the microprojector. Most importantly, anyone who recognized the generality of this fact, would know enough to ask about the less obvious; to ask, let us say, about the value of instructional film for teachers of mathematics.

In summary, we are offering the opinion that much more needs to be learned about the strengths and weaknesses of the various communications vehicles for the various subject-matter areas, before we get too busy telling teachers, in general, that they should make more use of the sundry sorts of communications vehicles that are available. We can hardly hope to create "desired cognitive structures" until we know what is, justifiably, most to be desired.

Creation of the Desired Motivational Structures

Attitude, as we have defined this term, is a prime example of a motivational structure in the social-psychological realm. It is a motivated belief in which one's self-image is involved in great to moderate degree. To change a belief that is also an attitude requires, therefore, either that the person involved adjust his self-image (a task for the therapist) or that he be brought to perceive the object of his attitude differently (the task of the information campaigner). However, the results reported in Chapter Six, in the first part of the present chapter, and in Appendix D, firmed us in the conviction that there is no such thing as *an* attitude toward audiovisuals *in general*. This conclusion now seems a logically necessary consequence of the previously argued position that communicative vehicle and the messages mediated thereby are not perfectly, nor even highly, correlated.

If a single teacher can consciously and rationally hold two distinctly different "attitudes" toward film, depending upon which of two subject areas he at the moment holds concern for, how can it make sense to speak of a person holding *an* attitude toward the instructional value of audiovisual materials? To speak of an attitude toward communication vehicles in general seems not realistic when reference is to conventional vehicles, and it is only a little more descriptive of actual cases, to thus speak, when reference is to the new and strange communication vehicles wherein "fear of the unknown" may enter as an attitude-determining factor.

Novelty and resistance to change. This brings us to a second neglected discrimination that may prove of value. This discrimination provides for categorizing AV devices in terms of their "novelty." Newness, historically defined, correlates with novelty, defined as a psychological category. A new invention is thus novel because it is new to every one. But an "old invention" may, for any given individual, also be novel--i. e., new for the particular individual. For present purposes it is important to regard "novelty" as a psychological, not a historical, category.

The novelty of a device is an important determinant of whether people will talk about it or not. Thus where one is involved in trying to achieve innovation through an information campaign, novelty or newness and resistance to change are important notions.

It is likely that, for most teachers, each of the three aforementioned projectors (the mirco-, the overhead-, and the Zeiss) is somewhat novel--more-so, at least, than is the movie projector. In line with this, it has been our impression that teachers are as little likely to discuss the wonders of film production, as they are the wonders of the printing press. We observed no concern, on the part of teachers, with the problems of the effectiveness or ineffectiveness of the devices necessary for the production (or transmission) of either film or printed messages. These latter, the technological impediments, seem nowadays to be taken for granted so far as the printing of books or the production of films are concerned.

In reference, again, to the data of the present study, it should have been realized upon logical grounds alone, that a non-novel, taken-for-granted, instructional device, would not be a subject of sufficient interest to generate the sort of discussions among teachers that are necessary for the emergence of "patterns of influence." To illustrate this point we reconsider the case history of the overhead-projector man (O. P. M.).

In Chapter Two we told of our failure to find "AV-relevant" networks. Teachers didn't talk to one another very much about films; when they did, these discussions were invariably between members of the same instructional department. In O. P. M. 's school, however, there was much interest in the overhead, and much discussion of its values could be traced to O. P. M. The reason the overhead (*qua* Device) was a topic of discussion while film (*qua* Medium), and the movie projector (*qua* Device) were not, could be due to many things, of course. We believe that *novelty* was one of them.

O. P. M. learned of the overhead at a National Science Foundation summer institute and upon his return to his high school his enthusiasm for the overhead became highly contagious. Imagine now that this had happened a half a century earlier, but that the device was Edison's "peep-show machine." One can well imagine the excitement caused by the movie projector while it was still, in fact, referred to as "Edison's peep-show machine." However, the motion picture is no longer novel for most teachers, and if anything related to film is discussed it is almost bound to be the message.

Teachers are likely to discuss the topic of a sufficiently interesting film with others. If the topic is a technical one, however, they are greatly restricted in the number of persons with whom they can meaningfully discuss the film.

But during the early days of moving pictures, the message content might have been unimportant relative to the generation of interest. The device would provide the focus of attention, and the range of interested parties would not therefore be restricted by the interest area touched by the message. This is illustrated in recent memory by the advent of television. When television was new upon the scene, the occasional owner of a television set regularly suffered a plague of "neighbors" who would descend upon his home only to stare mutely at "Felix the Cat." This kind of programming is no longer sufficient. Today, classics like "Have Gun, Will Travel" are usually necessary in order to capture a viewer's attention.

We are suggesting that something of this sort, though on a reduced scale, partially accounted for the teacher interest that O.P.M. was able to capitalize upon in displaying the merits of the overhead. The device was novel and it therefore had interest-value *as a device*. However, even if this suggestion is invalid in this particular case--and we can not sufficiently reconstruct the relevant history necessary to say this with certainty--still, it seems likely that a similar outcome would not have been possible with a *non*-novel medium such as film.

There is another "kind" of "novelty." It is illustrated by what appears to be a difference in attitude toward film and television. We have claimed that only a few teachers have negative attitudes toward film, but that there is some evidence that teachers do have negative attitudes with respect to instructional television.[30] At least this appears to be the case with respect to the *regular* classroom use of the medium. And yet as media, film and television are very nearly identical. Television messages like those used in the MPATI experiment are, first of all, *film* messages. The same sensory apparatus is involved in the reception of both kinds of messages. In both television and film, the visual element is largely pictorially encoded, and the auditory element is largely encoded verbally. There would seem to be differences between the two devices only in terms of the size and clarity of the visual images they can display.

In Chapter Six we reported about asking teachers their opinions concerning instructional films, instructional television, and certain of the "newer media." Film was most liked, but the "newer media" were better liked than was instructional television. In general, there was little understanding of the few examples of "new media" identified by the interviewer, but all the teachers interviewed were well acquainted with television. Although television was less novel it was, seemingly, more feared than were the examples of new media that were discussed.[34]

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[30] A common first response to a question we asked about the value of instructional television, was one to the effect that "television will never replace the teacher." This response (and near variants) accounted for a large proportion of all the responses made to this question. When asked an analogous question about instructional film, not a single teacher asserted that *film* would never replace the teacher. Apparently this was too obvious a truth to require comment. Too obvious, that is, in the case of film, though not in the case of television.

The threat that television apparently holds for some teachers--at least initially--seems to have very little to do with the medium as such, but a great deal to do with the way the medium is used. Our belief is that the degree of control a device takes from a teacher so far as the production of messages is concerned, rather than any consideration of novelty or newness per se, is a factor of most importance here. This leads to a third discrimination that, to our knowledge, has largely been ignored.

Teacher control of message. We previously named a collection of three AV devices as follows: the microprojector, the overhead projector, and the Zeiss projector. Let us now add the motion picture projector to this listing. In line with the requirements of an earlier category--the range of subject-matter application of a communications device--the motion picture projector can be grouped with the overhead and separated from the micro and Zeiss projectors. This is because both films and overheads are more widely useful in instruction than are the materials that are used with the micro- or Zeiss projectors. But although the overhead and instructional film have a broader range of application, the reasons involved are quite different. The overhead is widely useful for the same reason that the chalkboard is widely useful. The overhead like the chalkboard permits the teacher to produce his own messages to fit his own particular needs. With film, however, the messages come already canned. Thus the flexibility or broadness of application we have claimed for film, comes because a wide variety of film titles happen to be available. By the same token, the teacher's control of the film message is effectively limited to that of selection. This results because most teachers are ill-equipped to produce their own films.

Instructional films, originally, must have seemed to teachers to take from them a great deal of the control of message production. In contrast with television, however, this loss is small. The loss of control that comes through the regular classroom use of television, as in the MPATI experiment, is really quite enormous.

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[34] We have little doubt but that the regular day by day use of instructional television such as was then being planned for the MPATI experiment, aroused more anxiety than any of the items on the "new media" list. Not only was film favored by the largest number of respondents and television by the smallest number, but in terms of mean scores, the new media were highest--a little higher than film--while television was again lowest. Even so, there are a number of difficulties in interpretation. First, the examples of "new media" that were discussed can not be thought to be representative of any definable universe of new media. (See question 3.3, Alpha and Beta schedule, Appendix E.) There is no reason even to suppose that a "new media universe" is a psychologically meaningful category. We believe, indeed, that the argument and evidence given as disconfirming of the "generality hypothesis," applies here as well. Moreover, the list of "new media" included closed circuit television as one instance of this category and this, especially, would seem to confound the point made in the text.

No matter how long television may have been around--and even in instructional use at the classroom teacher's instigation--great and understandably disturbing changes therefore seem likely to occur whenever television instruction is first made a regular part of the daily instructional plan. The classroom teacher is forced to play a different role than before, and this role is one he seems likely to regard as less prestigious than was his previous role.[35]

It appears that teachers are especially likely to have negative attitudes toward some new instructional device or teaching procedure in those cases wherein a substantial role change is necessitated, and where it is not perfectly clear but that the role change required may depreciate the teacher's image of himself as a teacher. Teachers do adjust quite rapidly, apparently,[36] and so novelty of role more than novelty of device would seem to be an important distiction for the purposes of an information campaigner.

Creation of the Desired Behavioral Structure

We originally believed that the biggest problem for solution by an information campaigner involved finding ways in which to create the desired motivational structures in the target audience--that is, in finding ways in which to achieve the desired change in attitude. It now seems that insofar as one is concerned primarily with the more conventional media and materials, the biggest task is that of creating the desired behavioral structures. The latter is an easier task than is the former. In quite a measure it is a matter of streamlining administration.

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[35] Miss Josefina Patron, in a doctoral study completed under the supervision of the principal investigator, has discovered that this seems to be the case and that, interestingly, the teachers who have had the greater number of years of training are the ones most apt to regard their teaching role, with television, to be less consequential than was true previous to the introduction of television.

[36] In a doctoral thesis recently completed under the supervision of the principal investigator, Kambiz Mahmoudi predicted that a teacher's attitude toward the value of instructional television would be a function of (1) the length of time the teacher had been using television in regular classroom instruction, and (2), the degree of "authoritarianism" in the make-up of the personality of that teacher. This last was measured by means of the California F-scale. Following the "authoritarian personality theory," Dr. Mahmoudi predicted that the greatest resistance to instructional television would be shown by those teachers who had been "receiving teachers" for only a short time, and who also scored on the "highly authoritarian" end of the F-scale. Equally inexperienced teachers who scored more toward the "non-authoritarian" end of the scale, were predicted to show less resistance--i.e., to have more favorable attitudes. It was predicted that both "authoritarian" and "non-authoritarian" teachers would become more favorable toward instructional television as their experience with it increased. All predictions were confirmed at highly acceptable levels of confidence.

If it is true that the desired cognitive and motivational structures have been created in the target audience, the problem insofar as the use of instructional materials is concerned seems to us to require that the campaigner take cognizance of the "least effort" principle, and make recommendations that, hopefully, money and good administrative practice could bring to fruition. This follows from the three-step sequence outlined by Cartwright, as applied to the present problem. Thus, if a person is knowledgeable concerning the value of audiovisuals, if he knows how to use them (or is anxious to learn), and wants to use them, he still may fail to act because of competing motives that are stronger. We know from both the normative and non-normative studies that this often happens--and more, that it happens because utilization problems often make it difficult to use audiovisuals effectively.

In our earliest thinking, we believed that when a teacher mentioned utilization barriers as a reason for not making more use of audiovisuals than he did, that this was symptomatic of a negative attitude. Later, we learned that the teachers whose opinions were most favorable, and who were also frequent users, were also the teachers most apt to complain about at least certain of the categories of utilization problems.

The most frequently mentioned deterrent to the use of films mentioned by the NIF respondents had to do with booking problems. Most notably the complaints were that films arrived too early or too late to fit in with plans, or they had to be ordered so far in advance the teacher couldn't anticipate how they might fit in or indeed what might fit in best.

Some of our most interesting observations on this topic related to a striking contrast in administrative practices in two Indiana high schools where films had to be ordered nearly a year ahead of time. It was quite clear in these schools, which were located in the same school district, that certain differences in the administrative procedures employed by the respective principals had had a marked effect upon the AV utilization practices in their schools. We can not justify recording these highly impressionistic observations. We bring up the point, however, because in light of the conclusions we have reached to the effect that attitude is not a serious problem with conventional media and materials, administrative and budgetary factors are seen to have an added importance. It seems to us that an "administratively oriented" investigator might, in a short time, achieve a basis for making sound recommendations of a sort to suggest "administrative solutions" to some of the most nagging utilization problems. Because our interests were what they were and our approach, therefore, what it was, we are not equipped to speak authoritatively in this realm.

Summary comment. We have stressed that message and message-mediating device are largely independent categories. It is nevertheless possible to designate certain peripheral bases for assuming small correlations between characteristics of devices and characteristics of the messages they can mediate. (This, of course, was the approach followed in certain of the above paragraphs.) Still, even in a superficial first attempt to develop workable categories for campaign purposes, there must be some concern for messages. Unfortunately, there is little to go on. A suggestion of an answer is perhaps possible, though, through a cursory look at contrasting subject-matter areas. We attempt this sort of analysis for the contrasting areas of mathematics and biology.

Like all science, mathematics has a pure and an applied aspect. But mathematics as a formal science is "pure" in a way aspired to by no natural science. In the development of mathematical systems and in teaching others about them, it is not necessary to make semantical statements about the symbols used. Mathematical symbols--the X's and the Y's--are only formal means of notation, and these need have no stated connection with the real world. The concern is only for the "empty" terms as markers, and with the rules for relating these meaningless terms one to another.

Audiovisual materials, however, seem especially useful when they make reference to picturable things. This last represents, in a heightened sense, that which pure mathematics self-consciously ignores--i.e., the world of real, and also picturable, things. Thus it seems unlikely that instructional film would be superior to the blackboard for explicating mathematical notions in terms only of the syntax of the system.

On the applied side mathematics is, of course, concerned with the world of things. To be of value, it is necessary to relate the syntactical system to the real world by giving the "empty" symbols meaning in terms of "real world" observables. Probably most mathematics on the high school level is taught in this "applied sense." However, even within this approach to mathematics, the general usefulness of instructional film and other ways of exploiting life-like symbols may be relatively small. This is because the particular way one chooses to define one's X's and Y's is generally of little importance so far as the mathematical system is concerned. Convenience of representation therefore assumes an overriding importance. Thus the "a" and the "b" in the formula $a^2 + b^2 = c^2$ may be defined as the legs of a right-angle triangle whose hypotenuse is "c," even though the subject is algebra, not plane geometry.

Biology, unlike mathematics, can never get away from the real world. Moreover, the forms of things in the real world that are of most interest to biology students are not often readily at hand to be observed. What, for example, does the spleen look like? Lacking pictures, one may use simile: the spleen looks like a bloody sponge. But this may be too inaccurate for many purposes. If movement is necessary for the attainment of a concept, film may be even more valuable. Peristaltic movement, for example, is everywhere; but it is ill-mannered to cut into a person in order to observe it. With film, however, it is easy to show peristalsis. In biological areas in general, film has an importance difficult to overstate.

We are not saying that film is useful in teaching biology and useless in teaching high school mathematics. We are suggesting, rather, that film may have a more important function in facilitating instruction in biology than it does in mathematics.[37] It very frequently happens that the message a teacher wishes to get across can be presented as well by means of the blackboard, vocally supplemented by the teacher, as with film. We are here suggesting only that this happens more frequently in mathematics than in biology. When the blackboard and vocal explanations suffice, they may be preferred not merely because of economy and ready availability, but because they permit the teacher greater control of the message, and this allows him to more readily and continuously exploit feedback than he might otherwise find possible. It seems that it would be important for an information campaigner to gather data of the sort this consideration suggests. This needs to be done for all the subject-matter areas, and it needs to be done with respect to all the major communications vehicles.

III. "What Are Audiovisuals?"

A more fundamental approach than that outlined in Part Two needs to be taken in seeking answers to questions of the sort posed in this chapter. The aim of this concluding section is to describe one obstacle that has so far thwarted the development of any such (more fundamental) approach. The obstacle is conceptual and it arises from the confusion of message with medium or device. We speak more generally about the nature of this problem.

The confusion between message and vehicle seems to have occurred only in research. At least we know of no professionally trained person who, for example, takes McLuhan's metaphor, that "the medium is the message," in any literal sense. No audiovisual person we know of, or have heard of, would recommend something solely in terms of the medium that was employed. No AV person we know of would produce a film without the help of subject-matter experts, nor would he recommend a film in ignorance of the audience or in ignorance of the purposes for its use. But why, then, should such a person, when attempting research, sometimes contaminate his research because at some point he confused message with device (or medium) in contexts where learning variables were central? We believe part of the answer is best understood in terms of a concept of "disjunction."

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[37] If the teaching of mathematics is, relatively, less benefited through the use of films than is biology--and, possibly, less so than is true of the other natural sciences--this fact should be reflected in the number of films available in mathematics relative to the number available in other subject areas. The highest proportion of mathematics films in any of the four school districts in which we interviewed, was three per cent. The numbers were 4, 4, 12, and 22 mathematics films, respectively, in each of the four districts.

An examination of a large film-rental catalog revealed the existence of nine "mathematics films," one "algebra film," and 19 "geometry films" suitable for use at the high school level. Most of the other subject areas were divided into a large number of subgroupings, and each of these subgroupings had at least as many films listed under it, as were listed for the entire area of mathematics.

"AV," a disjunctive category. The labels "AV device," "AV material," "AV communication," etc., often name disjunctive categories (Bruner, Goodnow, and Austin, 1948). To explain what this means necessitates a brief digression. The process conception of the world makes it clear that one's categories (concepts, variables) are invented not discovered. "Things" that are different are placed in the same category if they share a common attribute that is relevant to the purpose motivating the categorizing act. Identically categorized objects are identical with respect to those attributes, in terms of which, the category was formed. Thus a typewriter, an electric toothbrush, and a movie projector can be grouped together if the notion of "machine" is the concept of interest. Since every object has an individuality, however, a change in problem changes the way in which the collection of objects must be categorized. Thus if interest were to center on message machines, the toothbrush would be removed from the just noted category. Categorization will fall along different lines because the attributes of the objects that are of interest, and that are, therefore, criterial for the categorizing task, also change. For example, consider the following list.

1. A lecture (live)
2. A lecture (filmed)
3. A bulletin board
4. Team teaching
5. A typewriter
6. A pencil
7. A message not primarily dependent upon words
8. A message requiring more than one sense for its reception
9. A verbal message perceived by vision
10. A poorly programmed text
11. Any instance of good teaching
12. A message in Morse code
13. A Reader's Digest in Braille

If a group of professional audiovisual people were to separate some of these items to form an "AV" category, they might disagree as to the inclusion of some of them. For instance, one person might think in terms of a machine-listing definition of "AV communication," and form his AV category to fit this definition. Another may categorize under the influence of one of the sense-listing definitions, and a third may categorize in terms of what AV is not: i.e., primarily verbal.

Thus an audiovisual person may or may not wish to include a "live" lecture as an instance of the AV category, for although a "live" lecture is audible and visible and both verbal and nonverbal, it is not machine-mediated. Another may want to include a lecture if it is first filmed, though not otherwise. One who thought of an AV message in terms primarily of what it was not (i.e., words) may or may not wish to include the Reader's Digest in Braille, or a message in Morse code, depending upon his conception of "words," and so on.

However it seems possible that a group of contemporary audiovisual people might be fairly well agreed in this matter, because none of them, probably, would insist on a strict machine-listing, sense-listing, or any other kind of definition. This, however, is the very source of the trouble, for if this happened, the category formed would be disjunctive.

To illustrate further, let us suppose that an item could gain membership in the "AV category" if there was involved a message machine of the sort that projects the message upon a screen; or, if lacking this, the message involved was one in which pictorials were used; or, if lacking this, the message presented was "programmed," etc. An "AV category" such as this one would be a disjunctive category, because the rules for determining whether an item was or was not admissable take an "either this, or that, or that..." form.

Definitions that lead to the formation of disjunctive categories--or that derive from them--lack invariance of usage, however, and invariance is a primary requirement for terms naming concepts, or variables, useful for science. (See, for example, Mandler & Kessen, 1959.) Terms naming disjunctive concepts or variables lack invariance in any scientific application because the scales used to measure the magnitude of a variable must be unidimensional. (See any standard treatment of scaling.) If the variable is disjunctive, however, there is a question as to the nature of the particular attribute of the objects categorized, that is measured by the (presumably unidimensional) scale employed. This difficulty generally goes unrecognized. If one does recognize it however, and if one specifies the attribute, trouble is avoided because in acting thus, the variable is made to lose its disjunctive status. If this does not happen, however, intolerable confusion reigns.

The error described here is illustrated in a paper prepared by Hoban (1962) for a conference on "New Media Theory" held at Michigan State University. In that paper Hoban defined "educational media" by listing some machines. The common element in his list, he then pointed out, was machines. He failed to call attention to a not less obvious common element: that all the machines listed had the common function of message mediator. He did include one non-machine: viz., the programmed text book. Most revealing of the fact that Hoban was uncomfortable about his category was his expression of mild misgiving because he had a desire to include one non-machine. If Hoban had specified that he was interested in message-mediating machines, and if he also resisted the impulse to include the one non-machine, he would have had a conjunctive rather than a disjunctive category. Indeed, it would have been a rather broad category, and Hoban no doubt would wish to reduce it.

It is of no great importance for persons with "practical" concerns to worry over the sort of thing described above. Indeed, the practitioner is little plagued by disjunctive categories in the first place. And, of course, the audiovisual field is quite properly dominated by the practitioner who wishes to improve education directly and immediately, and not via the circuitous route of research. But when the practitioner becomes interested in research, if he does, it seems he begins to make the sort of errors we have spoken of. We believe that the reason for this is best understood in terms of a difference between the task of "sciencing" and the task of applying what has been discovered.

A "practical person" like the school audiovisualist is confronted with such tasks as helping Miss "A" prepare a display of rocks for a unit on minerals, or with trying to help the physics teacher illustrate the concept of "force." But the moment he wonders about the similarities and differences in problems of teaching about observables like rocks, and non-observables like "force," he is required to think more generally (in terms of more superordinate categories) than may have been his habit. As the categories that concern him become more superordinate, the possibility that these categories may also become disjunctive also increases.

The crucial AV problem. Difficulties of this type have prevented our achieving solutions to some of the most important AV problems. One such problem is expressed in the question that asks which of the various kinds of audiovisual materials are most effective for each of the various kinds of learning. Some researchers have presumed to give answers to this question, but we don't see how any very useful answers can be attained from any such effort when, as has generally been the case, AV was employed as a disjunctive category. The above question, when analyzed in order to display some of the assumptions contained therein, will show this more clearly. Some of the presumptions asserted or implied by the above question are as follows:

1. There are distinct kinds of learning.

2. There are distinct kinds of audiovisual materials.

3. Audiovisual materials aid the learning process.

4. The category-set naming the types of learning or the types of AV materials is not arbitrary--i.e., not capricious. Note that this presumption is a necessary one if the question is to be considered even potentially answerable. This results because it is logically impossible to relate, meaningfully, two universes of discouse (e.g., learning and AV materials) if either one or both of them are arbitrarily subdivided. This, in turn, is so, because the same answers given for arbitrary subdivision "X" can not hold for arbitrary subdivision "Y." And, finally, this last is so because, in being arbitrary, one subdivision can not be considered more valid than another.

5. The category-set naming the kinds of learning and the category-set naming the kinds of audiovisual materials are, each in its own area of discourse, both exhaustive and mutually exclusive. That is, the learning category-set must be such as to make it possible to categorize all the "kinds" of learning in one or another category of the learning category-set, and it must not be possible to categorize any one of the "kinds" of learning in more than one category of the set. The same holds, of course, for the various kinds of audiovisual materials *vis-a-vis* the AV materials category-set. (This is a renouncement of disjunctiveness.)

6. Each category-set, the one for learning and the one for audiovisual materials, derives from a single classification principle. (Another renouncement of disjunctiveness.)

7. The two classification principles thus resulting derive from a common behavior theory core, or have possible theoretical or common sense commonalities, whose constructs entail notions about learning. To classify audiovisual materials according to the particular senses stimulated, the physical nature of the technological impedimenta employed, the number of persons who can be simultaneously stimulated by a device, economic factors of cost, etc., might have practical significance for many purposes. However, only variables describing message characteristics would be relevant if a student's learning efficiency were of primary concern.

8. The relationship that is presumed to exist between a particular type of audiovisual material and a particular type of learning is independent of (a) idiosyncrasies of learners and (b) the specific content of the material to be learned.

It is probable that there would be good agreement among our readers in accepting as true some of the assumptions implicit in the above question and detailed here. There would be disagreement over others, or feelings of a need to qualify. (In particular, the invalidity of an assumption like number 8--may be inconsequential for some kinds of learning problems.) But clearly, some of the assumptions that demand to be sustained if research into the question implying the assumption is to be valid, are not sustained by the facts of the situation. And whenever this is the case that question--the one implying the false assumption--is unanswerable. Thus the question we have analyzed is, logically, an unanswerable question as it now stands. Primarily this is because "AV material" is a disjunctive category, and assumptions 5 and 6 are, therefore, invalid.

* * * * * *

We would conclude with a few questions of the sort we have been asking ourselves with increasing urgency as we have come to think a little more carefully about problems of the sort connected with this study.

In view of the marked degree of independence of vehicle and message (as we early phrased it), or of the disjunctive nature of the concept "AV" (as we later phrased it), what and why does one recommend to teachers whatever one does recommend, in order to improve the teaching-learning effort? Upon what grounds could those instructional instruments labeled "audiovisuals" be recommended as superior to or inferior to other instructional instruments labeled "nonaudiovisuals?" More to the point, how could it be the case that one would implicitly recognize the unreasonableness of recommending a particular audiovisual material in ignorance of the particular purpose for which it will be used and yet be able to recommend audiovisuals in general, or films in general, in ignorance of the particular purposes for their use?

We have no answers, but we believe we now have some better questions than have generally been asked, and this is a necessary first step. It seems important to recognize that carefully executed research will be of little avail in providing answers unless that research is carefully conceived.

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Appendix A: Materials for the Test of Networks

In this appendix is found, first, the letter sent to the teachers who were selected in the manner described in Chapter Five. The questionnaire these teachers were asked to complete is next. This questionnaire was to be completed, in part, as a response to an article entitled, "Let's Stop Calling it Portable," by Raymond Wyman. The article referred to can be found in the January 1962 issue of Audiovisual Instruction, pp. 26-27.

• • • • • • • •

Have you ever thought what your classroom might be like five to ten years from now? Enclosed is a two-page article giving one man's ideas along this line. Will you read this article and tell us what you think?

The article describes a nearly model classroom, and you may think "its too good to be true." But things have been changing ever more rapidly in recent years, and when you think about the things common to today's classroom that were unheard of as recently as the end of WW II... well, you know the answer to that. The article just doesn't seem quite so unrealistic when you look at it this way.

You can help us, if you will glance over the enclosed article and give us your reaction to it (see attached sheet).

So far, we have contacted only a few teachers; and we would therefore appreciate your discussing these ideas with other teachers in your school. You would be doing us a real service if you would list their names on the enclosed sheet, so that we might contact them, as well. We would very much like to reach other teachers interested in the newer developments in education.

Thank you for giving us your ideas and suggestion regarding this article.

1. What did you think (pro and con) of the ideas expressed in the article? (If you need more room, please use the back of this sheet).

2. As you can well imagine, the cost of equipping even a single room along the lines described, would be very high, and it would be no little problem to decide upon the most effective way to use any money set aside for an equipment budget.

The experienced teacher is the best judge here, and so we are asking your advice on this problem.

In order to make your choices and the choices of other teachers in other schools more or less comparable, please make your selection--explained below--on the basis of these assumptions: (1) that there is available sufficient material for use with any piece of equipment that you choose; (2) that the equipment you choose will be the only equipment available to you; and (3) that no one else uses your room.

Most of the equipment you might choose--not counting lab equipment which we exclude for present purposes--is listed below. The first thing we would like you to do is to draw a line through those items of equipment for which you would generally have little or no use. Then rank the remaining pieces of equipment in order of their usefulness to your teaching. Do this by numbering them "1" (most useful), "2", "3", etc. in the spaces provided to the left of the item.

______ record player
______ tape recorder
______ television set
______ opaque projector
______ microprojector

______ motion picture projector
______ slide and film strip projector
______ overhead projector
______ (other) ________________
______ (other) ________________

What subject area did you have in mind when you made these choices?

________________________________.

In the following spaces please list the names of those teachers with whom you discussed the article, so that we may write them for their ideas and suggestions.

Name	Address

Appendix B: The National Science Foundation Schedule

July 20, 1959

Dear Colleague:

Indiana University has recently received funds under Title VII of the National Education Defense Act to study one aspect of the broad problem of developing this country's scientific manpower. In this endeavor, we share an important goal with you who are attending the Summer Institute Program of the National Science Foundation. Our own specific problem is to appraise the usefulness (the weaknesses and strengths) of instructional film, film strips, etc., in teaching high school science.

In this first exploratory step of our research, we need to learn something of your opinions and experiences with audio-visual materials. As a teacher who has demonstrated a concern for improving science instruction, your judgments as to the strengths and weaknesses of audiovisual materials are especially important information for us to acquire.

Your frank and honest responses to this brief and anonymous questionnaire will be greatly appreciated by our research group here at Indiana University.

Sincerely yours,

James Q. Knowlton
Assistant Professor of Education
Indiana University

Science Teacher Questionnaire

Please give your responses by checking the appropriate box or by writing your responses on the appropriate line.

1. What training have you had in either the preparation or use of audio-visual materials such as films, film strips, slides, tape recorders, etc.? (Check as many categories as are applicable.)

   ☐ As a topic or unit in a methods course in college.

   ☐ College course(s) devoted totally to audio-visual materials.

   If more than one, how many courses?__________________.

   ☐ Audio-Visual workshop(s) (e.g. during a summer session).

   ☐ In-service training.

   ☐ Informal training (learning on your own initiative).

   ☐ No training.

2. As nearly as you can judge, how many different films (i.e. different titles) did you show your classes during the last school year?____________.

3. (a) To the best of your knowledge, would you say that you used films more, less, or about the same as other teachers in your school?

   ☐ More; ☐ Less; ☐ About the same

   (b) Similarly, would you say that you used films more, less, or about the same as other science teachers?

   ☐ More; ☐ Less; ☐ About the same

4. As nearly as you can judge, what is the general feeling among most of the teachers at your school with regard to the usefulness of films in the classroom?

   ☐ Very favorable.

   ☐ Moderately favorable.

   ☐ More or less neutral or indifferent.

   ☐ Moderately unfavorable.

   ☐ Very unfavorable

(b) Please answer the above question with regard to *science teachers* only.

☐ Very favorable.

☐ Moderately favorable.

☐ More or less neutral or indifferent.

☐ Moderately unfavorable.

☐ Very unfavorable.

(c) In general, what is your *personal* feeling with regard to the usefulness of films in the classroom?

☐ Very favorable.

☐ Moderately favorable.

☐ More or less neutral or indifferent.

☐ Moderately unfavorable.

☐ Very unfavorable.

5. Among the deterrents to the use of instructional film listed below, which, in your opinion, reduce the use of films among the teachers in your school? For each statement, place a "2" if it is a *major* deterrent, a "1" if it is a *moderate* deterrent, and a "0" if it is a deterrent of little or no importance.

a_______ Films are regarded as not very important aids to learning.

b_______ There is not enough money in the budget for a proper, up-to-date audio-visual program.

c_______ Many teachers lack sufficient training in the utilization of film.

d_______ The principal or superintendent is opposed or indifferent to the value of films.

e_______ Films or equipment are often not available when needed.

f_______ Films that are available are usually out-of-date.

g_______ Available films don't cover important subject matter.

h_______ Other deterrents: please specify:

____

____

6. In terms of your own experiences, what kinds of conditions or situations have most discouraged you in the use of instructional film?

____

____

____

____

____

____

(Continue on last page if necessary)

7. It has been found that teachers consult each other and give advice concerning the merits of instructional films. Compared to other teachers that you know in your school, would you say that you have given more, less, or about the same amount of advice regarding instructional film?

________ I have given more advice than I have received.

________ I have given less advice than I have received.

________ I have given about the same amount of advice as I have received.

________ Other (explain) ______________________________

____

8. In general, which of the categories listed below best describes what you do with the pamphlets, catalogues, announcements, etc., that come to your attention concerning instructional films?

________ I usually read such material quite thoroughly.

________ I usually glance through such material, but read only items of special interest.

________ I read such material only occasionally.

________ I seldom or never read such material.

________ Such materials have seldom, if ever, come to my attention.

BACKGROUND INFORMATION

9. ☐ Male; ☐ Female Age__________.

10. Where did you teach this past school year?____________________,
(city) (state)

What grades did you teach?____________________.

About how many students were in your school?____________________.

About how many teachers?____________________.

How many of these teachers taught science courses?____________________.

11. What position(s) did you hold during the past school year? (Check all that are appropriate.)

☐ Teacher; ☐ Assistant Principal; ☐ Principal;

☐ Audio-Visual coordinator (supervisor, director, etc.)

☐ Other (Please specify.)____________________.

12. (a) What subjects (e.g., chemistry, English, mathematics) did you major in while in college?____________________.

(b) What subjects did you teach during the last school year?

____________________.

13. Speaking very broadly, how satisfied would you say you are with your job as a teacher?

☐ Few, if any, dissatisfactions.

☐ More satisfactions than dissatisfactions.

☐ About as many dissatisfactions as satisfactions.

☐ More dissatisfactions than satisfactions.

Appendix C: Content Analysis Data

The question of concern here was question #8 on the NSF schedule, which read as follows. "In terms of your own experiences, what kinds of conditions or situations have most discouraged you in the use of instructional film?" The procedures followed in the content analysis of the responses to this question and the results obtained are given in the following paragraphs.

A random selection of subjects from the large pool of NSF subjects was made. Two of the investigators, acting as "judges," read the responses given by these subjects to the above question, noting the general types of deterrents that they listed (e.g., deterrents connected with booking problems, with the lack of physical facilities, lack of time, etc.). This was done independently by the two judges, but afterwards results were compared and disagreements threshed out. The judges then set forth a list of categories of deterrents and defined the boundaries of the categories as well as they could. With this category-set before them, the same two judges went over these same open-end responses a second time, classifying each statement of a deterrent into one of these categories, if possible, or placing the statement in a "nonclassifiable category," if this was not possible. Agreements confirmed some of the category definitions, while disagreements and an examination of the statements placed in the "nonclassifiable" category forced the combination of some categories, the addition of a few categories, and a more careful definition of most of the categories. The final or "working" list of categories that was used is presented in the text. The detailed categories and reliability data are presented here.

Table C-1 lists the category sets that were used. It should be realized, in this connection, that the judges had a much more detailed and clearer definition of these categories than is possible to the reader, for each statement in Table C-1 was for the judges, a cue that called to mind many hours of trial, discussion, and more trial.

Table C-1

Category Sets Used to Analyze
Responses to a "Deterrents Question"

I. The Films Themselves

1. Poor quality, no good, etc. (Negative response about content, explained or unexplained, but not included below.)

2. Too general; not specific; takes too long to get a point across; does not spend enough time on a point

3. Not relevant to subject matter or to age group; no films available in my area or on topics or level that I desire; few good films available; too hard; too easy

4. Old; out of date

5. Poor physical shape; film breaks; can't hear sound; worn out

6. Other

II. Facilities

10. Inadequate room facilities; no AV room; film room being used for other purposes or not available when needed or not convenient; crowded AV room; can't darken or use own room adequately; AV room too far away; too much bother or confusion in getting to a room to show film

11. Poor or faulty equipment; lack of equipment; can't get equipment when needed

12. No film library in our school or near our school; film not kept in convenient place

14. Unexplained; lack facilities; limited facilities; inadequate facilities; poor facilities

15. Other

III. Booking Problems with Film

20. Not available when needed; takes too long to acquire; have to book too far ahead; can't coordinate with subject matter because of booking problem, don't know in advance when a film will be needed

21. Lack of, or poor, administrative support of leadership

22. Inadequately or inaccurately reviewed in literature or catalogues; don't know what is available

23. Unable to preview (Due to lack of time, place, inconveniences, etc.)

24. No rental money available; other financial problems

25. Availability (unexplained)

26. Other

IV. Utilization

30.1 Not enough time because other pedagogic devices have higher priority or are preferred; not enough time in course schedule; takes too much time and effort to set up and take down projector and to show film; too inconvenient; too much bother

30.2 Lack time; time factor; (unexplained)

30.3 No time for review or follow-up discussion, etc.

31. Improper use by other teachers; e.g., use as "time fillers;" don't preview; don't follow up with discussion

32. Students or teachers see film as vacation, entertainment, or hold a poor attitude toward films

33. Teacher feels lack of training or opportunity to learn to use AV equipment

34. Poor projectionists or lack of projectionists; no one available to show film or operate equipment

35. Other

V. No response or not classifiable

36. Nonclassifiable (including statements such as "no complaints")

37. No response

Following this, a new set of respondents was selected and their answers to the question on deterrents were content analyzed using the above categories. Each statement in this final set of statements was judged by either three or four judges (the number depending only upon the availability of the fourth judge). By this process, each statement was assigned a "correct" category (as determined by majority agreement among the judges), and the percentage agreement among the judges in assigning the statement to this category was determined as follows:

Table C-5

Percentage Agreement and Reliability of Judgments Made in Categorizing Statements About Deterrents to the Use of Films

Content Category			Number of Judgments Correct	Number of Judgments Total	Percent Agreement	Reliability[a]
I.	The Films	1	142	148	96%	.90
		2	65	81	80%	.65
		3	205	212	97%	.90
		4	226	227	99%	.90
		5	79	79	100%	.90
		6	5	7	71%	---b
	TOTAL, I		722	754	97%	.90
II.	Facilities	10	276	279	99%	.90
		11	395	400	99%	.90
		13	26	27	96%	---b
		14	38	39	97%	.85
		15	---	---	---	---
	TOTAL, II		735	745	99%	.90
III.	Booking or Procurement	20	654	656	99%	.90
		21	39	40	97%	.93
		22	52	53	98%	.90
		23	66	68	97%	.90
		24	135	135	100%	.90
		25	19	20	95%	---b
		26	28	31	90%	---b
	TOTAL, III		1001	1023	98%	.90
IV.	Problems in the Use of Films	30, 1	100	101	99%	.90
		30, 2	91	92	99%	.90
		30, 3	20	22	91%	---b
		31	30	31	97%	---b
		32	52	53	98%	.90
		33	20	20	100%	---b
		34	19	20	95%	---b
		35	22	24	92%	---b
	TOTAL, IV		423	443	95%	.90
V.	No Response or Non-classifiable	36	77	80	96%	.90
		37	147	147	100%	.90
	TOTAL, V		224	227	99%	.90
	GRAND TOTAL		3119	3190	97%	.90

[a] Schutz's published tables do not give agreement levels beyond .90.

[b] Agreement levels are not tabled by Schutz for cases where the total number of judgments is less than 35.

$$\text{Percentage agreement} = \frac{\text{Number of correct judgments}}{\text{Total number of judgments}} \times 100.$$

This data is summarized in Table C-2 where percentage agreement figures are given for single categories, for the five larger category groups, and for all categories considered together. The reliability of these judgments is also presented, using a reliability measure described by Schutz (1952).

A total of 28 categories, falling under five major category types, was used in the judging process. However, small ns in some of the categories necessitated that related (i.e., similar) categories be combined. This was done in two different ways. First, categories that were judged by the investigators to be highly similar were combined. Second, and primarily to check upon the first procedure, all categories originally falling under one of the five major category headings were left intact and combined. It might be thought that this last procedure alone would have been preferred. This would have been inadequate, however, because the original basis for forming the five major categories was one that was entirely empirical and utilitarian. It was first necessary to achieve categories that could be reliably coded, and only then was it justifiable to attack the problem of psychological similarity in "meaning."

The original (precontent analysis) groupings were those that are presented in Table C-1. Using the same category numbers found in that table, the following groupings were developed. This was done in terms of the guidelines described and also in consideration of the number of responses falling in a category. If these were too few to allow statistical testing, the category involved was either combined with another related category or it was dropped, whichever seemed most justifiable.

A. Categories 1, 2, 3, and 4 were combined because they all concerned the quality of film content. The films were too general, not relevant to the subject matter, were out of date, etc.

B. Category 5 was kept separate from the other sub-categories of (major) Category 1, because it concerned deterrents specifically related to the physical condition of the films. Category 6, relating to complaints about film, per se, but otherwise unclassifiable, was eliminated because only two responses from all role and attitude groups fell into this category.

C. Categories 10, 11, 13, and 14 all concerned statements of deterrents that referred to inadequate facilities (both space and equipment). Category 15 in the facilities realm, is analogous to Category 6 in the "films per se realm" and was omitted for the same reason. No statements fell in this category.

D. Categories 20 and 25 concerned the availability of film. Films wanted were not available or were not available at the point in time that fitted lesson plans. Category 21 (lack of administrative support) was distinctive and therefore not combinable with other categories. Thus, even though 11 responses were classified in Category 21, it had to be omitted because the n was too small for statistical treatment.

E. Categories 22 and 23 containing statements to the effect that films were inadequately reviewed or could not be previewed (for any of several reasons), seemed similar and were combined.

F. Category 24, financial problems, was distinct and therefore not combined with any other category. Category 26 was omitted for the same reasons given for Categories 6 and 15.

G. Category 30. 1, which comprised responses indicating that showing film was a bother, that it took too much time and effort for the results achieved, was not combined with any other category.

H. Category 30. 2, which, like 30. 1 concerned the factor of time (but unexplained) was also kept separate. This was because the 30. 1 responses, in effect, stated something stronger than "not enough time." The implication of 30. 1 responses, in contrast to 30. 2 responses, was that should the day suddenly have 30 hours teaching techniques other than film would still be preferred as more effective. Category 30. 3, no time for reruns or follow-up discussion, was omitted because the number of responses was too small (n = 6) and the category too distinctive to combine with any other.

I. Categories 31, 32, 33, and 34 all had to do with improper utilization. For example, other teachers used film improperly--e. g. as "fillers." Teachers and students see films as a vacation or entertainment. Teachers don't know how to use AV equipment and lack the necessary help (student or otherwise). Category 35 was omitted for the same reasons as Categories 6, 15, and 26. There were but seven responses in this category and these were distributed among all the role and attitude groups.

J. Categories 36 and 37 were the no response and nonclassifiable categories respectively. Included here were a few responses to the effect that the respondent had never experienced any difficulties in using or getting film. These last were too few to deal with.

Appendix D: Data on attitude measurement procedures

Part One: Refining the attitude scale. In attempting to get a more refined scale for the measurement of attitude, the general approach was to use question #4-c (NSF schedule), as a basis for roughly separating the respondents into favorable and unfavorable attitude groups. Then the responses of these two groups to the open-end deterrents question (question #6, NSF schedule) was examined to determine which kinds of responses best separated persons holding positions on the extremes of the attitude continuum.

In the few attempts to scale attitudes toward audiovisuals that we have seen, the authors of the scales begin with a set of attitude statements that they themselves construct or that their AV colleagues or other interested persons help them construct. They then apply some standard refining procedure (such as the Thurstone or Likert), and administer the scale so derived to some sample of teachers.

We believe that such procedures can not be expected to sample the attitude universe that is assumed, for they do not sample the universe of attitudes held by teachers. At least this must be assumed to be the case in the absence of evidence to the contrary, because the items presented are reflective of the attitude universe that audiovisual persons and other interested and nonrepresentative persons only surmise to be the attitude universe relevant for most teachers. It is for this reason that we ignored the precoded deterrents item (question #5, NSF schedule), and concentrated on the open-end or free response deterrents item (question #6), in pursuing the just stated objective.

The development of the attitude scale. The first step was to examine the responses of the "favorable" and "unfavorable" attitude groups to the open-end question asking about difficulties personally encountered in using instructional motion picture film. For this purpose, the content analysis categories were left in a more detailed form than that used for reporting results in the text. These more detailed categories are listed in Appendix C.

The most striking finding to emerge from this examination was the already reported tendency for the negative attitude group to respond to the open-end deterrents question by mentioning "lack of time." This response took many forms, but the key thought was always "too little time." The infrequent users of film were also apt to mention this. This tendency is readily seen by means of a "discrimination index" which is defined as follows:

$$\text{Discrimination index} = \frac{/\ \%\ \text{Group X to "i"} - \%\ \text{Group Y to "i"}\ /}{\%\ \text{Group X to "i"} + \%\ \text{Group Y to "i"}}\ ;$$

and where "Group X" refers to the favorable attitude criterion group or the high user criterion group, etc.; and where "Group Y" refers to Group "X's" opposite or contrasting criterion group. The "i" designation refers to any given category of responses as determined, in the present case, by the content analysis described in Appendix C. The difference is percentage response is taken without regard to sign.

Using the response category briefly characterizable as "not enough time," we refer to the data from the two attitude groups. As it turned out, nine per cent of the favorable attitude group, and 55 per cent of the unfavorable attitude group said that the reason they did not use more films than they did, was because they did not have enough time. Thus:

$$\text{Discrimination index} = \frac{/\ 9\% - 55\%\ /}{64\%} = 72\%$$

When the criterion groups were formed on the basis of the number of films used in the past school year (question #2, NSF schedule), the result was the same. No content category separated the frequent user and infrequent user criterion groups as well as did responses coded as "not enough time."

Another content category that rather sharply separated the attitude criterion groups was one defined by responses holding student attitude responsible for the teacher's infrequent use of film. Examples of responses so categorized are these:

1. "Students expect entertainment."

2. "High school students seem to be conditioned to "lights-out" visual aids in a negative or nonlearning way."

3. "Students do not take [films] seriously," and it is "too much work to keep order during the showing of a film."

The two categories just described (i.e. "time," and "student attitude") were both favored by the negative attitude and the infrequent user groups. The favorable attitude and frequent user groups favored the following categories, here "defined" by illustrative answers.

1. "Films are not relevant to the subject matter being taught." Or, "Films are not suited to the age group for which they are intended."

2. "Where films must be scheduled a month or more before use, it is difficult to plan so that you will have the film when you need it." Or "Films often arrive too early or too late to fit in with the class work."

3. "I have no time or place in which to preview films." Or, simply, "No preview opportunity."

These three kinds of responses (objections to film content, booking problems, lack of preview opportunities), though mentioned by the favorable attitude group more often than by the unfavorable attitude group, were nevertheless mentioned fairly often by the latter group. These responses, then, did not allow for sharp discrimination.

Another type of response, given relatively more frequently by negative attitude teachers than by positive attitude teachers, referred to a lack of room-darkening equipment and to other shortcomings in the physical facilities present in the classroom. On the other hand, positive attitude teachers were more apt than negative attitude teachers to mention insufficient rental funds.

However, these last mentioned deterrents, even though they showed moderate separation of the attitude groups when questioned in the free response situation, were nevertheless abandoned as potential attitude items for the development of a precoded attitude scale. The basis for this decision was made on clear evidence that "too little money" and "inadequate physical facilities" were responses that attracted almost everybody, when these responses were "suggested," as they would have been, when using a "precoded" format. The same thing was true in the case of booking problems. Nevertheless, because this was the most frequently given of all responses in the free response situation, it was included for its "general interest" value. (As was soon discovered, this item did indeed attract a high percentage of all respondents in the non-normative sample.)

Only one thing seemed very clear at this point. This was that negative attitude teachers showed a much more marked tendency than did the positive attitude teachers to name what we came to call "teacher controllable" deterrents. This referred primarily to "time" (or lack of time) and to what the respondent claimed was a negative or "nonlearning" attitude of the student toward film. Consequently, "teacher-controllable" items such as those discussed here were thought to have a good potential for discriminating among teachers in regard to their attitude toward film, and the scale that was constructed was constructed in a manner so as to capitalize upon this.

The attitude scale that finally emerged consisted of eight (deterrent) items. These items were the actual responses of certain categories of the NSF respondents that were prototypal of the chosen categories. These responses were edited only slightly. Four of the items stated "teacher-controllable" deterrents. Four others, which were presented alternately with the first four items, named deterrents that were not teacher-controllable. The respondent in the interview situation was told that these items were typical of the responses given by a nationwide sample of high school teachers to a question asking about the things that had discouraged them in the use of film. The respondent was instructed to indicate, for each of the eight items (1) whether he had had similar difficulties very often or not, and (2) how serious he thought the named deterrent to be. The spoken instructions given the respondent describe the procedure that was used. (See Appendix E.)

In addition to the scale described, a second "direct" attitude scale was also employed. (By "direct" we mean that there was no attempt to hide what it was the scale was intended to measure.) The teacher's response to this scale came immediately upon his completion of the just described scale. The interviewer asked at this point:

"In terms of your experiences in teaching /name of subject the teacher taught/, how would you judge the overall usefulness of educational film?"

The teacher was presented with an attitude continuum and instructed as indicated in the illustration of this continuum. (See Appendix E.)

Some tests of the scales. We had stated a number of hypotheses that required, for their testing, a discrimination between extremeness of attitude, and intensity of attitude. The relation between extremeness and intensity is generally agreed to be one that takes the form of a "U" curve.

In regard to attitude toward audiovisuals, we suspected that among persons who were favorable in their attitude some would be much more intense in their feelings than others and, similarly, for negative attitude persons. In particular, a person having a financial investment in the field (such as might characterize the professional audiovisual person) might not differ very much in the extremeness of his attitude and from the position of a "very favorable" teacher. But in this realm of his life, a professional AV person would be more vulnerable than would be true of the usual "very favorable" teacher. And, if so, the professional AV person would be more readily threatened and therefore more readily disposed to hold AV-relevant attitudes intensely. Knowledge of the degree of intensity with which a favorable or unfavorable attitude was held would, therefore, be an invaluable aid in making possible differential predictions about attitude-relevant behavior.

With this in mind, the respondents were asked to make the two judgments previously described (i.e., "frequency" and "seriousness" judgments) for each of the eight attitude items comprising the scale. The "frequency" judgment, it was presumed, would be weighted in a way to measure extremeness of position more than intensity, while the "seriousness" judgment was presumed to be oppositely weighted. As it turned out, the two measures were almost perfectly correlated, and the only useful procedure open to us was to combine them. This was a set back because it precluded the possibility of making tests of several of our hypotheses. This failure to discriminate between two facets of attitude did not, of course, nullify the scale as a general measure.

The single-item attitude scale. It is widely recognized that valid attitude measurement is extremely difficult to accomplish. Primarily for this reason we wished to have a second measure of attitude that would have at least the virtue of face validity, even if it were subject to some degree of "plus gesturing" (as Alfred Adler has used the phrase). To this end, we employed a single attitude continuum.

To help determine if this single item would do the job for which it was intended, a miniature methodological investigation was carried out in the first two (of six) high schools in which we did our interviewing. A little previous to the point in the interview, when the respondent was asked to indicate his attitude on this single item scale, the interviewer surreptitiously made his own estimate of the respondents attitude on an identical scale. This came about midway in the interview; the interviewer thus had had approximately thirty minutes to size-up his respondent. The respondent's and interviewer's judgments of the respondent's attitude, along with some other measures to be described, made possible some degree of evaluation of the direct attitude question.

We asked first: *Do a respondent and his interviewer agree in their judgment about the respondent's attitude toward instructional motion picture film?* In this and all the following comparisons each of the two variables under consideration was dichotomized, and the dichotomized measures were formed into 2 x 2 contingency tables. All tests were 2-tail chi square tests.

The answer to the first question is affirmative. The interviewer was able to estimate the respondent's attitude to a degree higher than would be likely by chance ($p < .01$).

The NSF data showed a correlation between attitude toward and frequency of use of film. To check this further and to see if attitude toward *film* generalized to other projected materials, these questions were asked. *Does the respondent's attitude toward film, as estimated by the interviewer, correlate with the respondent's use of projected material?* And similarly: *Does the respondent's self-estimate of attitude correlate with his use of projected material?*

Significant results were again obtained. The interviewer's estimate *vis-a-vis* respondent, and respondent's self-estimate both predicted use of projected material better than chance ($p < .001$ and $p < .01$, respectively).

Testing further for any generalizing effects, we asked: *Will either the interviewer's estimate of respondent's attitude toward film, or the respondent's self-estimate, correlate with the respondent's use of nonprojected material?* The answer was "no." Thus, the direct attitude question was judged adequate for its specific purpose--i.e., for measuring attitude toward *film*--though not, of course, as a generalized measure of attitude toward AV, *for which it was* never intended. In retrospect, the above findings lend credence to the NSF attitude measure.

Thoughts concerning this sort of success with the simple single-continuum attitude scale, combined with our growing feelings of doubt about the real meaning of the concept of attitude in the context of this study, led us to abandon our complicated eight-item scale for the single item scale in most analyses. Our growing suspicions led us to make the additional analysis next described.

Part Two: Is a general AV attitude measure possible? In our exploratory work, in our examination of Kelley's AV attitude scale (described in the text), and in nonquantitative examinations of other AV attitude scales, we were drawn more and more to the conclusion that there does not exist what *would* be called (did it exist) an "AV attitude universe." The logic of attitude measurement requires that attitude scales be unidimensional; but this, in turn, requires that the items employed sample a unidimensional (i.e. homogeneous) attitude universe. If a behavioral (in this case, attitudinal) universe is highly heterogeneous, no random sample of measures of such a "universe" could be presumed to be unidimensional. More precisely, such a heterogeneous universe would not be an attitude universe at all, and for the very reason that it was heterogeneous. An understanding of this necessity arises from an understanding of the concept of attitude as a hypothetical or latent variable that is useful because it accounts for a pattern of consistency in a person's responses to many different stimuli. These many different stimuli, though indeed different, are similar in some way(s) that are of interest, and they are thus classifiable as belonging to a single category or universe in terms of their common possession of the feature or features that are of interest.

Our hypothesis is that the notion of a general AV attitude scale is not tenable because the notion of a homogeneous AV attitude universe is not tenable, and that to the extent "general AV attitude scales" may appear to measure something unitary, this that they measure is not degree of favorableness or unfavorableness toward AV media or materials as an instructionally relevant category. What such scales might (or might not) "tap," if not explicitly measure, can only be speculated upon. Possibly they measure such general characteristics as zest vs. apathy for teaching or the feeling of challenge vs. that of fear for what is unknown. Possibly, too, the feeling of uncertainty and discomfort in working with "gadgets" vs. an interest in "tinkering" is reflected in these scales. Most likely, all these things are reflected, and much else besides.

If, contrary to our hypothesis, it is reasonable to postulate a general AV attitude universe, there must then be shown to exist a "reasonably" high correlation or consistency among varying AV-relevant responses. A teacher with an unfavorable opinion of one medium or material would tend to have an unfavorable opinion toward most or all the other AV media and materials, and conversely for the teacher who is favorable. If this is not found to be the case, that finding supports our hypothesis.

To test this idea, we analyzed data on teacher usage of AV materials that were gathered by another investigator for another purpose (Harris, 1952). These data were collected to determine the frequency of usage of a wide assortment of AV materials and media by teachers in the public adult schools of California.

Our analysis of these data was performed in such a way as to reveal whether a teacher who was a frequent user of one material or medium made it more probable that this teacher would be a frequent user of other materials or media. If it is reasonable to assume a general AV attitude universe, one would expect to find just this. If, however, this is not found to be the case, the assumption of an AV attitude universe is weakened.

In pursuit of an answer we selected 14 of the more commonly used media and materials. These were: radio, recorders, recordings, television, motion picture films, filmstrips, 2 x 2 slides, opaque projectors, microprojectors, objects and models, charts and graphs, maps and globes, felt boards, and bulletin boards. The percentages of teachers using these materials in each of five subject areas were rank-ordered. The subject areas chosen were English composition, foreign language, mathematics and science, psychology, and social studies. The relative frequency of usage of these 14 different kinds of audiovisuals, when compared two materials at a time over the five subject matter areas noted, yielded 14 x 13 / 2, or 91 rank order correlation coefficients. The median value of these 91 correlations was .286. The correlations at the first and third quartiles were, respectively, .156 and .653.

Because of the high degree of similarity between certain of the original 14 kinds of audiovisuals used in the above analysis (e.g., recorders and recordings), another median correlation was determined after eliminating these similarities. When this was done, the median correlation dropped to .150. The audiovisuals for which usage data were taken in order to determine this latter median correlation were: recordings, television, motion pictures, filmstrips, opaque projectors, objects and models, charts and graphs, and bulletin boards.

Next, a cluster analysis (Thomson, 1951) was made using a matrix composed of all positive intercorrelation coefficients equal to or exceeding .4. By this means it was possible to identify three "usage patterns." These were (1) bulletin boards, 2 x 2 slides, filmstrips, and microprojectors; (2) opaque projectors, charts and graphs, and felt boards; and (3) motion picture films, and objects and models.

Several things may be inferred from these findings. Most significantly the fact of the many correlations near zero in magnitude indicates that it is not possible to infer generally high usage of a variety of audiovisuals from knowledge that a teacher is a frequent user of one such material. And so to the extent that usage of audiovisuals is presumed to be an index of attitude then to that extent it is probably incorrect to think in terms of the concept of a general attitude toward AV. This tends to confirm our hypothesis.

However, these findings do only tend to confirm our position, and a stronger statement does not seem justified at this time because of the nature of these data. It was not possible to analyze Harris' data in terms of individual teacher usage of the different materials, for he presented his findings in terms of preferences of categories of teachers, where a teacher's category membership was determined by the subject he taught. However, to the extent there is homogeneity of preferences for the various materials among teachers teaching the same subject there is justification for the position we have here set forth. We would, therefore, not report these data if we lacked evidence in support of the view that there is a considerably higher degree of similarity in materials and media preferences among teachers teaching the same subject than there is among teachers teaching in different areas. We found this to be true even when the subject areas were limited to those of mathematics and science as in the NSF study described in the text.

Not only is it true that teachers teaching a certain subject tend to use only a few materials and to exclude others, but this exclusion is of a systematic nature. Thus, some of the above described correlations were negative. It was observed, for example, that a teacher who uses television is more likely than are most teachers to exclude both felt boards and objects and models. It does not seem plausible in light of this, to conceive of a generalized attitude toward the AV field as a whole--except, of course, in the rather different way that would be evidenced by AV professionals who quite naturally have an emotional investment in the field. Rather, it seems more plausible to assume that attitudes (or opinions) are related in rather specific ways to particular materials or clusters of materials, and that this relation is to a particular instructional area.

Appendix E: Interview guide followed in the unstructured interviews with counselors, deans, assistant principals, principals, and district audiovisual directors.

1. EXPLAIN PURPOSES FRANKLY

1.1 Our purposes are to —
1-Learn of teacher evaluation of materials, techniques, etc.
2-Learn of information sources re: materials for teachers.

1.2 Show administrator questionnaire, pointing out what each part is and what it is intended to do.

1.3 Answer any questions about questionnaire or work.

2. Since your position allows you to have a more general view of all these questions than any individual teacher can have, your views are especially important.

2.1 Based upon your experience and position, what do you consider to be the most successful, important or useful educational techniques, activities, etc. that are used in this high school? (IF QUESTIONED) Techniques or activities, etc., that you feel best further the major goals of the school?...

2.2 If teaching methods or techniques are not specifically mentioned ask about — ... "What are some especially successful teaching techniques being practiced in your building"? (Get names when specific practices are mentioned.)

3. As I mentioned we are also interested in how teachers learn of ideas that are helpful in teaching.

3.1 What do you consider the most important and successful sources of such ideas for teachers. (Get names when specific practices are mentioned.)

3.2 If mostly formal channels are mentioned ask —
... "Another source of information and ideas that we are concerned with is the more informal sources.....persons who seem to influence their fellow teachers a great deal but are not necessarily in any position of responsibility....Are there any persons in your school who seem to have more than average influence upon other teachers in encouraging better teaching?....

3.3 (Same for....organizing the teachers in social, professional, informal activities?)

3.4 Are there any that exert such influence to resist necessary or desirable changes or improvements?

4. What formal or informal groups can be identified within the school? Proff., social, Bull session groups, etc. (NAMES)

5. Is there anything else that you feel should be added to an overall consideration (1) of successful teaching techniques or (2) channels by which teachers learn of such techniques?

Interview schedule for Alpha and Beta High Schools.

Indiana University -- U.S. Office of Education Evaluation
of the Role of Instructional Materials in the High School Curriculum

In an introductory letter, we explained the general objective of our research, which is to learn of the experiences high school teachers have had with various of the wide array of instructional materials. We wish to learn teachers' appraisals (the weaknesses and the strengths) of these materials: and, as well, the channels through which teachers typically learn about new materials or teaching aids.

Interviewer____________________

1.1 You are ____________________ 1.2 And you teach____________________
(MISS, MRS., MR.) (SUBJECTS)

1.3 in____________________
(DEPARTMENT)

1.4 What other subject, not counting subject(s) you are now teaching, have you taught the longest?____________________

1.5 Are you presently coaching or sponsoring a school activity? What is it?

____

1.6 How long have you taught in this school?____________________
(YEARS INCLUDING CURRENT YEAR)

1.7 How long have you taught all together?____________________

2.1 Thinking back over the past few years, what have you tried in the way of presenting course content that you feel has been quite successful?

HAND TEACHER PAGE T. 1

3.1 On this sheet are listed a few of the better known instructional materials. You have probably heard or read about most of these even if you haven't used many of them.

Opposite the name of each instructional material, would you first check whether or not you have ever used the material at any time in your classroom teaching? And second, for those that you have used would you check whether or not you have used the material at any time during the present school year? Finally, for those materials that you have used, please rank them from the most useful (Rank #1) to the least useful.

WHEN S HAS COMPLETED THIS ASK, FOR EACH MATERIAL LISTED AS HAVING BEEN USED THIS YEAR . . . .

Can you tell me about how many days during last Fall semester you used

______________________________?
(NAME OF MATERIAL)

	Material	No. of Days Material Was Used
1.	Instructional Motion Pictures	
2.	Slides	
3.	Film Strips	
	Sum f=	
4.	Disc Recordings	
5.	Tape Recordings	
6.	Radio (use outside classroom)	
7.	Radio (use in the classroom)	
8.	TV (use outside the classroom)	
9.	TV (use in the classroom)	
10.	Felt or Flannel Boards	//////////////////////
11.	Models or Specimens	//////////////////////
12.	Maps, Globes, Charts or Graphs	//////////////////////

Sum f=

HAND TEACHER PAGE T. 2

On this sheet are listed some instructional devices or materials not many people are acquainted with as yet. However, the U. S. Office of Education is interested in finding out how widely these are known.

3.2 Have you heard of any of the following materials? (COMPLETE COLUMN "A")

3.3 (FOR THOSE MATERIALS MENTIONED, ASK:) Could you explain what a (an) ______________________________ is?
(MATERIAL NAMED)

	Are you familiar with the following materials? (A)			Have you used the material any time in teaching? (B)			If have used, how useful was it? (C)		
New or specialized Material	Yes	No	?	Yes	No	?	+	0	-
Closed-Circuit TV									
Language Laboratories									
Automated Self-Teaching Devices									
Scrambled Books									
Micro-projector									
Overhead Projector									
Opaque Projector									

3.4 Would you tell me whether or not you have used ______________________________
______________________________ any time in your teaching?
(NAME OF FAMILIAR MATERIAL) (COMPLETE COLUMN "B")

3.5 (FOR THOSE MATERIALS THE TEACHER HAS USED, IF ANY, ASK:) How would you rate ______________________________ as an aid to teaching? Would
(NAME OF MATERIAL USED)
you say it was :Quite useful? (SCORE +) Not very useful? (SCORE -) or Moderately useful? (SCORE 0) (COMPLETE COLUMN "C")

HAND TEACHER PAGE T. 5

3.6 Although you may have had little (or no) experience with these newer media, the U. S. Office of Education is interested in your appraisal of their probable usefulness in your subject area. In terms of what you have heard or read, or in terms of any experience you have had, how would you judge the probable overall usefulness of these so called newer media?

Put a vertical line through the scale marked "newer media," at the point which most clearly indicates your feeling on this.

(E RATE S) (RATE S RE PREDICTED USEFULNESS OF THE "NEWER MEDIA")

S is among the most favorable	S holds quite typical views	S is among the least favorable

---

HAND TEACHER PAGE T.3

3.6 In a nation-wide study, we asked high school teachers about the things that most discouraged them in the use of instructional motion picture film. This sheet I've given you contains a few typical replies.

This first statement is not a very accurate description of what one has to do to use film in this school, but you may have had similar experiences. Would you say you have had similar, even if less serious experiences, frequently, occasionally, infrequently, or never?

> To indicate your response, put a vertical line through the first scale, at the point which most nearly indicates how your experiences compare with the one described.

Before you go ahead, please note, that it is possible for a frequently encountered deterrent to be not a very serious deterrent, while on the other hand a less frequently encountered deterrent could be serious enough to greatly reduce the extent to which you would use film. For this same first statement, then, how serious, father than how frequently encountered, is the deterrent that is mentioned? Has it been a serious, a moderate, or a mild deterrent to your own film usage?

> Would you take two or three minutes now to check your views on the remaining seven statements just as you have done on this first statement?

(WHEN S HAS COMPLETED RESPONSES TO DETERRENTS QUESTION, HAND S PAGE T.5, ASK:) In terms of your experience in teaching ____________________ how would you judge the overall usefulness of
(NAME OF SUBJECT)
educational film?

Put a vertical line through the scale that is marked "Film" at the point which most nearly indicates your feeling on this.

(E RATE S)

S is among the most favorable	S holds quite typical views	S is among the least favorable

4.1 Can you recall the title--or what the film was about--in the case of the two or three films you have used most successfully?

Title	Where first heard about 4.2
1. ____________	1. ____________
2. ____________	2. ____________
3. ____________	3. ____________

4.2 Do you recall where you first learned of these films? (RECORD ANSWER ABOVE)

4.3 With whom have you discussed any of these films?

1. ____________
2. ____________
3. ____________
4. ____________

5.1 What magazines, journals, etc. do you read fairly regularly that contain new ideas or discussions of trends in education? (DO NOT PROBE: DO NOT RECORD NAMES OF BOOKS.)

1. ____________
2. ____________
3. ____________
4. ____________
5. ____________
6. ____________

5.2 In addition to written sources, it has been shown that people often get many of their ideas about what's new in the world from personal contacts. In connection with such personal contacts as sources of new ideas, who would you say are the two or three persons in this school with whom you most frequently share ideas or information?

TO INTERVIEWER: IF S SEEMS RELUCTANT, EXPLAIN (1) THAT AS PROMISED, ANONIMITY IS GUARANTEED FOR ALL PERSONS. ALL NAMES WILL BE CODED INTO NUMBERS IMMEDIATELY (2) NAMES ARE REQUIRED, HOWEVER, BECAUSE WE WISH TO TEST HYPOTHESES RELATING THE RELATIVE IMPORTANCE OF PERSON-TO-PERSON, AND MASS MEDIUM-TO-PERSON SOURCES OF INFORMATION RELATIVE TO INSTRUCTIONAL MATERIALS. THAT IS, TEACHERS, MAY LEARN OF NEW MATERIALS FROM OTHER TEACHERS WITH WHOM THEY ARE FRIENDS, FROM PERSONS IN SUPERVISORY CAPACITIES, OR FROM SOME MASS MEDIUM SOURCE. WE WISH TO LEARN THE RELATIVE IMPORTANCE OF EACH.

NAME	TEACHER? Same Dept.	TEACHER? Other (Specify)	DEPT. HEAD? Same Dept.	DEPT. HEAD? Other (Specify)	HOW OFTEN SEEN? Daily, Weekly or Monthly
1.					D W M
2.					D W M
3.					D W M

On an informal level, who are two or three persons in this school with whom you most frequently share ideas?

4.	D W M
5.	D W M
6.	D W M

Who are some persons outside of the school with whom you frequently share ideas?

7.	D W M
8.	D W M
9.	D W M

From which one of the above persons you have named, do you think you have gotten the most valuable information so far as teaching is concerned? (WRITE NUMBER OF THE PERSON MENTIONED:____________________)

6.1 Have you heard of airborne television? Yes No

6.2 What sorts of things have you heard about it?

6.3 Have you discussed this with other teachers in this school? Yes No

6.4 What do they think of airborne television?

6.5 Do you see any very real value in airborne or other regularly scheduled classroom television? YES! yes NO! no ?

( ) Yes, TV brings in otherwise unavailable people (experts, personalities).
( ) Yes, for demonstrations.
( ) Don't know.

Other: (RECORD AS NEARLY VERBATIM AS POSSIBLE)

6.6 Do you see any dangers or difficulties in the regularly scheduled classroom use of television? YES! yes NO! no ?

( ) Might lose personal contact.
( ) Might, if classroom teacher lets TV do it all.
( ) Might if student can't participate.
( ) Might if TV teacher's views conflict with classroom teacher's views.

Other: (RECORD AS NEARLY VERBATIM AS POSSIBLE)

HAND TEACHER PAGE T. 5

6.7 In terms of what you have heard or read about television in the classroom, how would you judge its probable usefulness in your subject area? Would you put a vertical line through the TV scale at the point which most nearly indicates your feeling on this?

(E RATE S: RATE S RE PREDICTION OF S OPINION OF USEFULNESS OF REGULAR CLASSROOM TV)

S is among the most favorable	S holds quite typical views	S is among the least favorable

7.1 Do you see the recruitment of able students into the teaching profession as a very serious problem?
YES! yes NO! no ?

7.2 Do you feel the need for any very significant change in a teachers role or in a teachers duties or responsibilities in order to make the teaching profession more attractive?
YES! yes NO! no ?

7.3 Do you believe most teachers are about as well satisfied with their chosen profession as are comparably trained people in other professions; or are they less well satisfied?

( ) about as well satisfied as other comparably trained professional groups
( ) not as well satisfied as other comparably trained professional groups

(IF S REPLIES, "about as well satisfied", ASK:) Would you say teachers are, possibly, even more satisfied than comparably trained professionals in most other fields?
YES! yes NO! no ?

(IF S REPLIES, "not as well satisfied," ASK:) Would you say teachers are markedly less satisfied with their profession than comparably trained professionals in other fields?
YES! yes NO! no ?

HAND TEACHER PAGE T. 6

7.4 (E RATE S RE JOB SATISFACTION)

S is among the most satisfied	S is among the least satisfied

8.1 Have you taken any advanced work, workshops, etc. beyond the batchelors degree? Yes No

(IF YES, ASK 8.2; IF NO, ASK 8.3)

8.2 When did you take your most recent advanced work?__________________

In what subject area?____

Approximately how many hours of advanced work have you taken the last five years?_________________________

8.3 What degree do you hold?____

When was it granted?________________.(E ESTIMATE S's AGE)________

8.4 What did you major in?____

8.5 What education courses, taken in college or at workshops, etc., do you value most?

(IF NO AV COURSE MENTIONED, ASK:) Have you ever had a course in AV methods, or a workshop or other training in this field? Yes No

(IF YES, SPECIFY):

Interview schedule for Delta-1 and Delta-2 High Schools

In an introductory letter, we explained the general objective of our research, which is to learn of the experiences high school teachers have had with various of the wide array of instructional materials. We wish to learn teachers' appraisals (the weaknesses and the strengths) of these materials: and, as well, the channels through which teachers typically learn about new materials or teaching aids.

Thinking back over the past year or two, what have you tried in teaching ________________________, that you feel has been especially successful?

(A. 1) — MENTIONS USING AV

(B. 1) — MENTIONS USING A TECHNIQUE OF TEACHING, BUT NON-AV

(C. 1) — FAILS TO MENTION ANY DIRECT TEACHING TECHNIQUE (e. g.) MENTIONS SOMETHING PRIMARILY TO DO WITH DISCIPLINE, GRADING, ORGANIZATION OF CLASS, FUND RAISING, ETC.)

(A. 2) What is it about ______________________ that makes it successful?
(ITEM MENTIONED IN A. 1)

(B. 2) Have you, in the past year or two, tried any type of audiovisual or other instructional device that you had not previously tried? IF YES, B. 3 | IF NO, B. 4 (B. 2)

(B. 3) Was ______________________ successful (B. 3)
(ITEM MENTIONED IN B. 2)

What is it about __________________ that makes it successful?

(C. 2) Have you, in the past year or two, tried any teaching technique that you had not previously tried?

IF YES AND AV MENTIONED, ASK B. 3

IF YES BUT NO AV MENTIONED, ASK B. 2
IF NO.......................... ASK B. 2

(B. 4) Have you ever used instructional film, film strips, or other projected material; or recordings, models, or displays of materials to help you in your teaching? (B. 4)

Respondent has used: ____________________________

____

The phrase "audiovisual aids" calls different things to mind for different people. What do you think of when you think of "audiovisual aids?"
(RECORD ITEMS IN THE ORDER THEY ARE MENTIONED)

1. ______________________ 4. ______________________

2. ______________________ 5. ______________________

3. ______________________ 6. ______________________

Hand 5
page T. 1

Here is a list of some teaching or audiovisual aids. Would you answer some questions for me about these?

1. First, (whether or not you have ever used any of these), would you name for me, those you have some knowledge about. (IF Q. IF YOU EVEN KNOW WHAT THE AID OR MATERIAL IS SUPPOSED TO ACCOMPLISH OR WHAT IT IS SUPPOSED TO DO, THEN THAT IS KNOWLEDGE ABOUT THE DEVICE.)

2. Have you ever used any of these things you have named?

3. (IF YES:) Have you used any of them during the past school year?

4. (IF YES:) About how many times have you used these things during the past fall semester?

	Do you know what it is?			Have you used it?		Used it any time this year?		How many times during the past fall semester?
	Yes	No	?	Yes	No	Yes	No	Frequency
Projected materials								
Instructional film. . . .								
Slides								
Film strips								
Over-head projector. . .								
Micro-projector.								
Opaque projector. . . .								
Recorded Sound								
Disk recordings								
Tape recordings.								
Mass Media								
Radio								
Television								
Teacher-made aids								
Felt boards.								
Models, Specimens . .								
Flat pictures.								

Instructional film has been one of the most frequently used AV aids, and I would like to ask you a few questions about it.

1.2 When did you last show an instructional film?

1.3 Do you recall the title? (IF NO:) Do you recall what it was about?

1.4 Where did you learn about this film?

1.5 Approximately how many different films--i.e. different titles--did you show during last fall semester?________________________.

Educational television is one of the more recent technological developments introduced into the schools.

1.6 Have you heard about airborne television? Yes, No.

1.7 Will there be any courses taught in your teaching area on airborne television? Yes, No, (IF YES:) What are they?

Objections to the intensive and extensive use of educational television have been raised from various quarters. It has been said, for example, that:

1.8 Educational television will deprive children of needed human warmth.

Would you say that, in general, you agree with this objection, or disagree with it?
( ) agree ( ) disagree ( ) no opinion

How strongly do you feel about this?
( ) very strongly ( ) moderately strongly ( ) not strongly

1.9 It has also been said that educational television will lead to ever larger and larger classes with all the attendant drawbacks of extremely large classes. Do you, in general, agree with this objection, or disagree with it?
( ) agree ( ) disagree ( ) no opinion

How strongly do you feel about this?
( ) very strongly ( ) moderately strongly ( ) not strongly

1.10 Another objection stems from the belief that educational television will deprive students who have individual problems, of the personal attention they so often need.

Do you, in general, agree with this objection, or disagree with it?
( ) agree ( ) disagree ( ) no opinion

How strongly do you feel about this?
( ) very strongly ( ) moderately strongly ( ) not strongly

1.11 It has been urged, finally, that educational television can never adapt to the special needs of a local community.

Do you, in general, agree with this objection, or disagree with it?

( ) agree ( ) disagree ( ) no opinion

In a nation-wide study, we asked high school teachers about the things that most discouraged them in the use of instructional film. On this sheet, we have reproduced a few typical replies of these teachers.

Hand S
page T. 2

One such reply was this first statement: "My time is not well spent when it comes to showing films. I have to preview the film, schedule the equipment, haul it in, set it up, take it down, and then return it to a central area five floors below."

Although this is probably not a very accurate description of what you have to go through to use film in this school, you may have had somewhat similar experiences. Would you say you have had similar, even if less serious experiences, frequently, occasionally, infrequently, or never?

To indicate your response, put a vertical line through the first scale under question number one at the point which most nearly indicates how your experiences compare with the one described?

Before you go ahead, note that it is possible for a frequently encountered deterrent to be not a very serious deterrent, and not one to markedly effect the extent to which you would wish to use film; while, on the other hand, a less frequently encountered deterrent could be serious enough to greatly reduce the extent to which you would use film. For this same first statement then, how serious, rather than how frequently encountered, is the deterrent mentioned? Has it been a serious, a moderate, or a mild deterrent to your own film usage?

Mark your response the same way as before, but on the second scale under the first statement.

Then, beginning with the second statement on the sheet I have handed you, would you take two or three minutes to check your views on the remaining seven statements just as you have done on this first statement?

(WHEN S HAS COMPLETED RESPONSES TO DETERRENTS QUESTION, ASK:) In terms of your experiences in teaching ____________________, how would you judge the overall usefulness of educational film?

Put a vertical line through the scale at the point which most nearly indicates your feeling on this.

I think highly of film, without qualification			I think highly of film, but with some reservations			I think film is, generally, not too useful	
1	2	3	4	5	6	7	8

In general, where would you say you most frequently read about new teaching ideas or new trends in education?

2.0 (IF REFERENCE NOT GIVEN) In what magazine, journal, or book do you most often find such ideas?

Names: 1.____________________, 4.____________________

2.____________________, 5.____________________

3.____________________, 6.____________________

2.1 Have you, in the course of such reading, come across discussions of:

(a) Automated Self-Teaching devices: (IF YES:)
Could you tell me what your understanding of these devices is?

(b) Scrambled books? (IF YES:)
Could you tell me what these are?

In a number of studies, it has been shown that people often get many of their ideas about what's new in the world from personal contacts in their day-to-day living and working; and not alone from the newspaper, radio, etc.

3.0 In connection with such personal contacts as sources of new ideas, who would you say are the two or three persons in this school with whom you most frequently share ideas? (IF Q. NEEDED:)
The ideas shared could be about most any topic and not just ideas about new teaching aids, materials, or techniques. Who, for example, are the two or three persons in this school with whom you most frequently share ideas or information of most any sort?

1.______________________________

2.______________________________

3.______________________________

(CHECK SPELLING OF NAMES WITH RESPONDENT
IF ANY DOUBT AT ALL EXISTS.)

3.1 Are these people teachers? Yes, No; (IF NO:) Who are they?

3.2 Do you often discuss anything about teaching with them? Yes; No.

(IF NO:) With whom in this school did you most recently discuss anything about teaching?

____

3.3 Who are some persons outside of the school with whom you frequently share ideas? (RECORD NAMES IN ORDER)

1.____________________ 3.____________________

2.____________________ 4.____________________

3.4 What do these people do?

1.____________________ 3.____________________

2.____________________ 4.____________________

3.5 Do you often discuss anything about teaching with these people? Yes, No

3.6 Do you often discuss things with students outside of the classroom situation? Yes, No

3.7 Have you ever encouraged a student to become a teacher? Yes No

3.8 Do you recall what you said to encourage them?

3.9 What kinds of changes in a teacher's role, or in a teacher's duties or responsibilities do you think would best accomplish the goal of attracting an increasing number of the better students into the teaching profession?

BACKGROUND INFORMATION

I have a few background questions to ask you, and that will finish the interview.

4.0 How long have you taught in this school?________________.

4.1 What courses are you now teaching?________________________.

4.2 What other courses, if any, have you taught at any time in the past?

4.3 Did you teach at another school before coming here? Yes No

How long did you teach there?

4.4 How many years have you taught all together?____________________

4.5 Have you ever had training in the preparation or use of audiovisual materials? (IF YES:) What kind of training?____________________

4.6 Married? Yes No

4.7 Do you have any children? (______) How many are of school age?____
Number

4.8 Where did you go to college?

What degree do you hold?

Have you taken any advanced work or work shops, etc. in the past 5 years?
Yes No ?

Interviewer____________________

Date______________Time______

School____________________

Ss name____________________

Sex: M F

Age: ____

Interview schedules for Gamma-1 and Gamma-2 High Schools

In an introductory letter, we explained the general objective of our research, which is to learn of the experiences high school teachers have had with various of the wide array of instructional materials. We wish to learn teachers' appraisals (the weaknesses and the strengths) of these materials: and, as well, the channels through which teachers typically learn about new materials or teaching aids.

1.1 You are ______________ ? 1.2 And you teach ______________.
(MISS, MRS., MR.) (SUBJECTS)

1.3 in ______________
(DEPARTMENT)

1.4 How long have you taught in this school? ______________
(YEARS INCLUDING CURRENT YEAR

1.5 How long have you taught these subjects? ______________
(SPECIFY NAMES OF SUBJECTS TAUGHT)

1.6 How long have you taught in ______________ department?
(NAME OF DEPARTMENT

1.7 How long have you taught all together? ______________

1.8 What other subjects have you taught during the past 10 years? ______________

2.1 Thinking back over the past few years, what have you tried in the way of presenting course content that you feel has been quite successful?

2.2 What have you tried in connection with student assignments, projects, or other such activities that you feel has been quite successful?

2.3 What have you tried in connection with maintaining good classroom discipline (student interest, motivation, work habits, etc.) that you feel has been quite successful?

2.4 In which of these three areas (that of presentation, student assignment, or classroom discipline), do you think the discovery of new, really workable ideas or techniques would be of most help?

CIRCLE ONE: 2.1 2.2 2.3

COMMENT, IF ANY:

HAND TEACHER PAGE T. 1

3.1 On this sheet are listed a few of the better known instructional materials. You have probably heard or read about most of these even if you haven't used many of them.

Opposite the name of each instructional material, would you first check whether or not you have ever used the material at any time in your classroom teaching? And second, for those that you have used, would you check whether or not you have used the material at any time during the present school year?

WHEN S HAS COMPLETED THIS ASK, FOR EACH MATERIAL LISTED AS HAVING BEEN USED THIS YEAR, ...

Can you tell me about how many times you used ________________ during last fall semester?.... (NAME OF MATERIAL

How would you rate this teaching aid? Is it among the most successful you have used; among the least successful, or is it somewhere in between these?

		Among the most useful you have used?			Among the least useful you have used?			Or is it somewhere in between these?		
Material	f	YES!	yes	?	YES!	yes	?	YES!	yes	?
Instructional Motion Pictures										
Slides										
Film Strips										
Disc Recordings										
Tape Recordings										
(use outside Radio classroom)										
(use in the Radio classroom)										
(use outside Television classroom)										
(use in the Television classroom)										
Felt or Flannel Boards										
Models or Specimens										
Maps, Globes, Charts or Graphs										

HAND TEACHER PAGE T. 2

On this sheet are listed some instructional devices or materials not many people are acquainted with as yet. However, we are interested in finding out how widely these are known.

3. 2 Are you familiar with any of the following materials? (COMPLETE COLUMN "A")

	Are you familiar with the following materials? (A)			Have you used the material anytime in teaching? (B)			If have used, how useful was it? (C)		
New or Specialized Material	Yes	No	?	Yes	No	?	+	0	-
Closed-Circuit TV									
Automated Self-Teaching Devices									
Scrambled Books									
Micro-projector									
Overhead Projector									
Opaque Projector									
Flip Charts									
(ANY NEW MATERIAL, NOT MENTIONED, THAT YOU KNOW OF?)									
SPECIFY									

3. 3 Is there any new or specialized instructional material or device, not listed here, that you know of? What is it? (COMPLETE THE INFORMATION FOR THIS MATERIAL, IF ANY, AS FOR THOSE LISTED.)

3. 4 Would you now tell me whether or not you have used ______________________ any time in your teaching?
(NAME OF FAMILIAR MATERIAL) (COMPLETE COLUMN "B")

3. 5 (FOR THOSE MATERIALS THE TEACHER HAS USED, IF ANY, ASK:) How would you rate ______________________ as an aid to teaching? Would
(NAME OF MATERIAL USED
you say it was: (COMPLETE COLUMN "C")←
Quite useful? (SCORE —)
Not very useful? (SCORE +)
or Moderately useful? (SCORE 0)

HAND TEACHER PAGE T. 3

3.6 In a nation-wide study, we asked high school teachers about the things that most discouraged them in the use of instructional motion picture film. This sheet I've given you, contains a few typical replies.

Although this first statement on your sheet is not a very accurate description of what you have to go through to use film in this school, you may have had somewhat similar experiences. Would you say you have had similar, even if less serious experiences, frequently, occasionally, infrequently, or never?

To indicate your response, put a vertical line through the first scale under question number one at the point which most nearly indicates how your experiences compare with the one described?

Before you go ahead, please note that it is possible for a frequently encountered deterrent to be not a very serious deterrent, while on the other hand, a less frequently encountered deterrent could be serious enough to greatly reduce the extent to which you would use film. For this same first statement then, how serious, rather than how frequently encountered, is the deterrent that is mentioned? Has it been a serious, a moderate, or a mild deterrent to your own film usage?

Would you take two or three minutes now to check your views on the remaining seven statements just as you have done on this first statement?

(WHILE S IS COMPLETING THE EIGHT SCALES, INTERVIEWER ESTIMATES Ss EVALUATION OF FILM ON SCALE BELOW. THEN, WHEN S HAS COMPLETED RESPONSES TO DETERRENTS QUESTION, ASK:) In terms of your experiences in teaching ________________________, how would you judge the overall usefulness of educational film?

Put a vertical line through the scale that is at the bottom of the page you have been marking, at the point which most nearly indicates your feeling on this.

I think highly of film, without qualification	I think highly of film, but with some reservations	I think film is, generally, not too useful

1 2 3 4 5 6 7 8

4.1 Can you recall the title--or what the film was about--in the case of the two or three films you have used most successfully?

Title	Where first heard about 4.2
1.____________________	1.____________________
2.____________________	2.____________________
3.____________________	3.____________________

4.2 Do you recall where you first learned of these films? (RECORD ANSWER ABOVE)

4.3 With whom have you discussed any of these films?

1.____________________

2.____________________

3.____________________

4.____________________

5.1 What books, magazines, journals, etc. do you read fairly regularly that contain new ideas or discussions of trends in education? (DO NOT PROBE.)

1.____________________

2.____________________

3.____________________

4.____________________

5.____________________

6.____________________

5.2 Have you heard of the midwest program on airborne television? Yes No

5.3 What have you heard about it?

5.4 Have you discussed this with other teachers? Yes No

5.5 What do they think of airborne television?

5.6 Do you see any very real value in airborne or other extensive use of television in schools?

5.7 Do you see any dangers or difficulties in the regular and extensive use of television in schools?

6.1 In addition to written sources, it has been shown that people often get many of their ideas about what's new in the world from personal contacts...

In connection with such personal contacts as sources of new ideas, who would you say are the two or three persons in this school with whom you most frequently share ideas or information?

NAME	TEACHER? Ss Dept?		DEPT HEAD? Ss Dept?		OTHER (Specify)	HOW OFTEN SEEN		
	Yes	No	Yes	No		Daily	Weekly	Monthly
1.								
2.								
3.								

(NOTE: ANSWERS TO THE FOLLOWING QUESTIONS SHOULD BE RECORDED ABOVE IN THE SPACE INDICATED, AND THEY SHOULD BE ASKED ONLY IF NEEDED INFORMATION IS NOT VOLUNTEERED.)

6.2 Is this person a teacher (department head, administrator)?

6.3 Is this person in your department?

6.4 About how often do you speak with this person?

(OPTIONAL)

Topics Most Often Discussed	Person #1	Person #2	Person #3
Student Misbehavior			
Student behavior			
Working Conditions, salaries, etc.			
School routine-reports, etc.			
Course method of instruction			
Course content			
School social-athletic activity			
Other			

6.5 Ideas shared "over a cup of coffee," during lunch hour, or other informal conversations are often occasions for sharing ideas or information about teaching or other topics. Who are two or three persons in this school with whom you most frequently share ideas informally?

NAME	TEACHER? Sa Dept?		DEPT HEAD? Sa Dept?		OTHER (Specify)	HOW OFTEN SEEN		
	Yes	No	Yes	No		Daily	Weekly	Monthly
1.								
2.								
3.								

6.6 Is this person a teacher (department head, administrator)?

6.7 Is this person in your department?

6.8 About how often do you speak with this person?

Topics Most Often Discussed	Person #1	Person #2	Person #3
Student Misbehavior			
Student behavior			
Working conditions, salaries, etc.			
School routine-reports, etc.			
Course method of instruction			
Course content			
School social-athletic activity			
Other			

6.9 Who are some persons outside of the school with whom you frequently share ideas?

NAME	JOB	RELATION				
		Spouse	Roommate	Relative	Teacher	Other
1.						
2.						
3.						
4.						

(OPTIONAL)

Topics Most Often Discussed	Person #1	#2	#3	#4
Student Misbehavior				
Student behavior				
Working conditions etc.				
School routine-reports, etc.				
Course method of instruction				
Course Content				
School social-athletic activity				

7.1 Have you ever encouraged a student to become a teacher? Yes No

7.2 Do you recall what you said to encourage them?

- Candidate Ability
  - Stress academic ability __________
  - Stress personality __________
  - Other __________
- Rewards in Teaching
  - Financial
    - Good salaries __________
    - Convenient hours __________
    - Job security __________
    - Need for teachers __________
    - Other __________
  - Personal Rewards
    - Encourages self-improvement __________
    - Never boring __________
    - Professional status __________
    - Gratitude from ex-students, others __________
    - Other __________
  - Social
    - Rewards from Student contact __________
    - Rewards from Faculty contact __________
    - Rewards from Public contact __________
    - Other __________

Avoid criticism of the teaching profession __________

7.3 What kinds of changes in a teacher's *ROLE*, or in a teacher's DUTIES or responsibilities do you think would best help attract more of the better students into the teaching profession?

	Clerical, administrative________
Fewer nonteaching Duties	After School________
	Disciplinary Police________
	More respect as professional citizen________
More prestige or profl. status	More freedom from special taboos________
	Less public criticism________
	Other (If money see below)________
More Money	Aid teaching candidates________
	Compete with other fields________
	Smaller classes________
	Homogeneous groups________
Better Assignments... Time... students	Better prepared students________
	Fewer interruptions________
	More preparation time________
	More free (unscheduled) time________
	More equipment, materials________
Facilities	More room or own room________
	Better lounge, etc.________
	Expression of controversial ideas________
More freedom of action	Special taboos on teachers________
	Experimentation in teaching tech.________
	Evident joy in teaching________
Better examples by teachers	Objects of student admiration________
	Up-to-date in content & technique________
	More respect for student maturity________
	Less criticism for profession by profession________

8.1 When did you take your most recent advanced work or workshop?________
In what subject area?________
Approximately how many hours of advanced work have you taken the last five years?________
What degree do you hold?________ Granted when?________
Major________ (If not major in Education, what courses in Education? Methods________
A. V.________
Other________

Did you have any Education courses________? Were motion pictures, slides, recordings, or other special methods used in any of your college classes?

T.1

Note: These response forms were those used at Alpha and Beta High Schools. Similar but not identical response forms were used at the other four schools.

DIRECTIONS: Opposite the name of each instructional material listed below, *first* check whether or not you have ever used the material at any time in your classroom teaching. *Second*, for those that you have used, check whether or not you have used the material at any time during the present school year. *Finally*, for those materials that you have used, please rank them from the most useful (Rank #1) to least useful.

	Check if you have used the material at any time.	Check if you have used the material during the present school year.	Rank materials used, as to usefulness. Rank most useful as #1
Material			Rank
Instructional Motion Pictures			
Slides			
Film Strips			
Disc Recordings			
Tape Recordings			
Radio (use outside classroom)			
Radio (use in the classroom)			
Television (use outside classroom)			
Television (use in the classroom			
Felt or Flannel Boards			
Models or Specimens			
Maps, Globes, Charts, or Graphs			

T. 2

NEW OR SPECIALIZED MATERIAL

Closed-Circuit Television

Language Laboratories

Automated Self-Teaching Devices

Scrambled Books

Micro-projector

Overhead Projector

Opaque Projector

T.3

PUT A VERTICAL LINE THROUGH EACH SCALE AT THE POINT WHICH MOST NEARLY INDICATES HOW YOU FEEL ABOUT THE STATEMENT

1. My time is not well spent when it comes to showing films. I have to preview the films, schedule the equipment, haul it in, set it up, take it down, and then return it to a control area five floors below.

Have you had similar experiences?	Yes, Frequently	Occasionally	Infrequently or never
How serious a deterrent?	Serious	Moderate	Mild

2. While most films effectively present some points, they often present much that is neither pertinent nor relevant.

True of your experience?	Yes, Frequently	Occasionally	Infrequently or never
How serious a deterrent?	Serious	Moderate	Mild

3. Too much disruption occurs in the classroom in the process of getting the projection equipment set up to operate properly, or when a film breaks or something else goes wrong.

True of your experience	Yes, Frequently	Occasionally	Infrequently or never
How serious a deterrent?	Serious	Moderate	Mild

4. Instructional films often present inaccurate or misleading concepts or ideas.

True of your experience?	Yes, Frequently	Occasionally	Infrequently or never
How serious a deterrent?	Serious	Moderate	Mild

5. High school students seem to be conditioned to "lights-out" visual aids in a negative or nonlearning way.

True of your experience?	Yes, Frequently	Occasionally	Infrequently or never
How serious a deterrent?	Serious	Moderate	Mild

T. 4

6. Many films present experiments, demonstrations, or exercises that can and should be performed in class.

	Yes, Frequently	Occasionally	Infrequently or never
True of your experience?			

	Serious	Moderate	Mild
How serious a deterrent?			

7. A 10 to 15 minute film will frequently take most or all of the time in a full class period.

	Yes, Frequently	Occasionally	Infrequently or never
True of your experience?			

	Serious	Moderate	Mild
How serious a deterrent?			

8. Scheduling difficulties are such that I often receive films at times that do not correspond with the topic I am on.

	Yes, Frequently	Occasionally	Infrequently or never
True of your experience?			

	Serious	Moderate	Mild
How serious a deterrent?			

T. 5

OVERALL EVALUATION OF VARIOUS INSTRUCTIONAL MEDIA IN TERMS OF SUBJECT-AREA TAUGHT

DIRECTIONS: Put a vertical line through the scale designated by the interviewer, at the point which most nearly indicates how you would evaluate the usefulness of the media or medium under consideration. Please do this in terms of the usefulness of the instructional media for the subject area in which you are now teaching.

THE "NEWER MEDIA",

Have very great potential value	Have very little potential value

. . . .

INSTRUCTIONAL MOTION PICTURE FILM:

Extremely useful in my subject area	Not very useful in my subject area

. . . .

AIRBORNE OR OTHER REGULAR USE OF CLASSROOM TELEVISION:

Has very great potential value	Has very little potential value

. . . .

T. 6

DIRECTIONS: Weighing the various satisfactions and dissatisfactions all of us experience in the teaching profession, how satisfied, overall would you say you are as a teacher?

I have few, if any dissatisfactions	I have more dissatisfactions than satisfactions

. . . .